# Owners Report on Cooling, Refrigeration . . *Pg. 14*

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## ✓ INSIDE THIS ISSUE

THERMOELECTRIC REFRIGERATION — Where does it stand today? This is the subject of an editorial on page 10 and of Tech Center on page.....11

OWNERS REPORT — Supermarkets evaluate refrigeration, air conditioning. Service and installation manager for Los Angeles chain describes an ideal installation and gives some ways to accomplish it .....14

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## Mueller Climatrol Cooling Sales Up 22% During 1960

MILWAUKEE — Mueller Climatrol, division of Worthington Corp., made substantial gains again this year in cooling sales, H. P. Mueller, Jr., president, reported recently at the division's annual operations meeting.

He said Mueller sales increased by 22% compared with an estimated industry gain of 12%.

Mueller also reported that consolidated sales of warm air furnaces by its Milwaukee and Alhambra, Calif., facilities were down slightly from peak levels established in 1959 because of a 20% decline in housing starts.

Mueller views 1961 with optimism based on forecasts for an improvement in the residential housing market by mid-

*(Continued on Page 4, Col. 3)*

## Quiet Kool Line Offers Convertible Casement Unit

JERSEY CITY, N. J.—Emerson Radio & Phonograph Corp. has introduced its 1961 line of "Quiet Kool" air conditioners featuring the Quiet Kool convertible casement window unit, model 7A9C.

The latter is described as "a new development in air conditioners which provides versatility of installation either in a casement window or a double-hung window as desired."

Emerson also announced its full 1961 line of Quite Kool "Kool-Mount" air conditioners incorporating an "automatic instant installation feature."

"The line covers a complete range of models with cooling

*(Continued on Page 4, Col. 4)*

## *Progress In Use of Certification Program Documented In ARI Report*

HOLLYWOOD, Fla.—Of 107 dealers selling air conditioning equipment in 21 cities recently studied in a survey sponsored by the Unitary Air Conditioner Section of the Air-Conditioning & Refrigeration Institute—

Only 10% confine their sales activities to residential air conditioning exclusively.

Some 25% sell exclusively in the commercial air conditioning market.

The remaining 65% of the dealers covered in the survey sell all kinds of equipment to any potential user of air conditioning.

Of the dealers surveyed, 74% were found to be familiar with The ARI Unitary Air Conditioner Certification Program, 47% were aware that the equipment certified under the program carried a "Symbol of Certification," and 45% of the dealers covered in the survey declared that they made use of the fact that they were handling certified equipment in their selling efforts.

In another survey conducted

*(Continued on Back Page, Col. 1)*

## NEMA Div. Asks Room Unit Certification

NEW YORK CITY — The Consumer Products Div. of the National Electrical Manufacturers Association has suggested to the division's Room Air Conditioner Section that it develop a certification program and this is "progressing rapidly."

Homer Travis, chairman of the Consumer Products Div., so reported at NEMA's 34th annual meeting here in reviewing accomplishments of the division.

In his report, Travis noted that the division held its first meeting in Chicago June 1-2, with seven of the eight sections represented.

"However," he pointed out, "by that time we had been at work as a unit for a long time. In fact, the board of directors has met five times since the first of the year. The board is a

*(Continued on Page 4, Col. 1)*

## Inside Dope

By GEORGE F. TAUBENECK

*Learn to live and laugh — thus delay your epitaph*

### *For Our Industry: A Break-Through?*

Scientists devote their lives to solving puzzles. Doggedly they labor—years, decades, even centuries. Suddenly, sometimes "out of a clear sky," comes an unexpected solution.

Hence, in this age of missiles-to-Mars and power-from-a-turnip, perhaps it's presumptive to call attention to a new development in so relatively mundane a field as residential heating.

Yet, in its own modest bread-and-butter realm, the advent of *ducted electric heating* truly constitutes a" break-through."

It opens a Pandora's Box of possibilities for heating dealers, for the air conditioning industry, for public utilities, and for the general public.

---

### *Mighty Are the Electricalities*

Let's discuss these beneficiaries, and their respective benefits, in random order. Public utilities (electric) ferinstance. What do they have in common with the price of Btus?

Plenty!

Their overwhelming promotional power "put over" electric refrigeration, "stole" lighting and cooking from more economical gas, and have made the All-Electric Home a badge of success in the suburbs.

Over and over again, during bull sessions with air conditioning prime movers-and-shakers down through the years, we've heard the following prayer:

"Golly! If only we could get the electric utilities to push residential air conditioning, we'd have it made!"

Ducted electric home heating systems may pry open this hitherto locked (or, at least, stuck) door, as we shall see later. In the meantime. . . .

---

### *Wise Norrisisms*

John Norris, who runs widely admired Lennox Industries with his left hand (while devoting his major cerebration to philosophical conjuries) doesn't fault the Electricalities for this presumed neglect of an opportunity to build greater demand for metered energy.

On the contrary, he believes that air conditioning hasn't, until yesterday morning, been *worthy* of "all out" public utility promotion.

*(Continued on Page 8, Col. 1)*

## RACCA Plans Drive To End Direct Selling Practices

*By Phil B. Redeker*

MIAMI BEACH, Fla.—Finding fault with many of the current industry marketing practices, the Refrigeration & Air Conditioning Contractors Association (RACCA national) is instituting a campaign to correct these practices—by consultation and persuasion if possible, with an expressed desire on the part of many members for more direct action should such methods fail to bring the desired results.

The convention passed a resolution (see adjoining column) declaring that the practice of the manufacturer in attempting to sell both to the contractor and in direct competition with the contractor be condemned as against the best interests of the public and the industry, and that the association make complete investigation of such practices, and to bring the results of such investigation to the attention of the industry, the public, and legislative bodies.

In his inaugural talk as RACCA's newly elected president, Walter McCarty, head of McCarty Bros. Equipment Co., River Forest, Ill., expressed the desire to explore the possibilities of the "consult and persuade" method of improving business practices in all segments of the industry—including those in the contracting field—although he did not bar the possibility of moves for more direct action where it might seem necessary.

Both McCarty and retiring president Tom Alexander, Denver contractor, emphasized that the line of communications between the contractors and other segments of the industry—notably manufacturers and supplies wholesalers—had been noticeably strengthened during the past year, with regular meetings between intra-industry relations committees established by RACCA, ARI, and ARW. Both men pointed out that certainly both ARI and ARW were being made "aware" of what RACCA considers to be poor business policy and practice, and that both groups had indicated a willingness to look into the alleged bad practices.

However, McCarty said in his inaugural address that in his viewpoint the real problem was to get the whole industry to realize that "the customer is

*(Continued on Page 6, Col. 1)*

### RACCA Resolution On Direct Selling

Whereas, in the early stages of the development of the refrigeration and air conditioning business the manufacturer justly complained of the sales techniques, engineering abilities, quality of workmanship, financial responsibility and service capabilities among contractors in the industry;

Whereas, as a result of these complaints and in the interest of serving adequately the user of equipment the refrigeration and air conditioning contractor, through training, investment of monies, and development of latest techniques, has grown in stature and in ability to properly serve the public; and

Whereas, because of destructive practices in the industry a number of manufacturers have ceased selling exclusively through the contractor, and, while making sales through the contractor, these manufacturers also in direct competition with the contractor make direct sales at the same or lower price to the user without adequate provision for engineering, installation and service, to the detriment of the public and the contractor;

Now therefore, we the members of the Refrigeration & Air Conditioning Contractors Association, in convention assembled this Nov. 20, 1960, do hereby resolve

(1) That the practice of the manufacturer in attempting to sell both to the contractor and in direct competition with the contractor be condemned as against the public interest and against the interest of the Refrigeration and Air Conditioning Industry.

(2) That the Association make a full, fair and complete investigation of each instance of this practice of direct-to-user sales.

(3) That after verification of each instance of such practice, the Association shall bring the results of such investigation to the attention of the public, our legislative bodies and to all members of the industry.

(4) That to assist in this investigation, all members of the industry report to the Association any example of direct manufacturer-to-user-sales.

## Union Carbide Div. Names Husted, Gray

NEW YORK CITY—Appointment of E. E. Husted as manager-fluorocarbons marketing, and Charles F. Gray as sales manager-"Ucon" refrigerants for Union Carbide Chemicals Co., division of Union Carbide Corp., was announced recently.

*(Continued on Back Page, Col. 5)*

**Sought by NLRB Examiner**

## Ban on Union Coercion of Piggly-Wiggly

SAN ANTONIO—A National Labor Relations Board trial examiner has recommended that United Association Local 142 be ordered to cease threatening, coercing, or restraining Piggly Wiggly stores here in an effort to force Piggly Wiggly to cease doing business with the non-union San Antonio Refrigeration Co., which has been doing Piggly Wiggly's service and installation work.

Trial Examiner Fannie Boyls also recommended that the union be ordered to cease engaging in or encouraging employes of Piggly Wiggly or employes of other firms working at the same site to engage in a strike or refusal to perform services with the same object in view.

Miss Boyls, however, recommended dismissal of charges that the union violated the National Labor Relations Act by distributing handbills near Piggly Wiggly stores to inform the public that Piggly Wiggly employed a subcontractor who paid substandard wages.

Miss Boyls pointed out that no work stoppage resulted from the handbilling; nor was there any refusal to handle products or perform services.

She concluded that Congress intended in the, 1959 publicity proviso added to the boycott provisions of the National Labor Relations Act, to protect the union's right of free speech.

The NLRB report on the case indicated that Local 142's business agent had approached Piggly Wiggly's division manager here last spring during construction of the food chain's new store in the Northwest Center, and urged him to employ a union contractor to install new refrigeration fixtures.

After the manager refused and assigned the work to San Antonio Refrigeration, the union's financial secretary allegedly threatened that this "would cause a lot of trouble" and "there might be some knots in some heads."

Shortly thereafter, the union put pickets at the entrances to the not-yet-opened shopping center and began distributing handbills near the entrances of other Piggly Wiggly stores.

Employes of two plumbing subcontractors at the site refused to cross the picket lines.

## Miami Truck Leasing Firm Acquires Controlling Interest In Temco, Inc.

NASHVILLE, Tenn.—Majority interest in Temco, Inc., gas heating equipment manufacturer, has been purchased by three officials of the Ryder System, Inc., of Miami, a truck leasing organization with financial interests in various fields.

James A. Ryder, president of Ryder System, said the company was purchased by himself and two other associates, Ralph, his brother, and Roland N. Reedy. Both are Ryder vice presidents.

James Ryder said he and his associates paid more than $2,000,000 for the firm whose sales are estimated at about $20,000,000 a year.

It was understood that Ralph Ryder will be chairman at Temco.

The purchase by the Ryder officials of approximately 81% or some 81,000 of Temco shares outstanding was confirmed by F. Donald Hart, president and chief executive officer of Temco. He said the transaction would mean no change in personnel, products, or operating policies.

"We hope to go right on in our same production program and increase our position in the heating field," Hart stressed. He will continue as president of Temco, which has not had a board chairman for several years.

The company, which began as Tennessee Enamel Mfg. Co., has been operating here for 39 years. In addition to making gas heating appliances, it merchandises air conditioning equipment, produces glass-lined tanks for the water-heating industry, and does some work in the missile field.

In September of this year, Temco hosted a big industrial trade show in celebration of the production of its 2,000,000th gas heating unit.


THROW YOUR COMPRESSOR *OUT!

*OUTSIDE, THAT IS!

KRAMER'S outdoor compressor is the only compressor designed to operate outdoors for any application under all temperatures and weather conditions.

Completely assembled, wired, tested and factory run-in, it arrives on the job ready to operate. Simple hookup eliminates costly installation and control adjustment time. Kramer's outdoor compressor ends waste of valuable indoor space.

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KRAMER OUTDOOR COMPRESSOR

KRAMER TRENTON CO. • Trenton 5, N. J.

46 YEARS OF CONTINUOUS ACHIEVEMENT IN HEAT TRANSFER


## Charles S. Leopold Dies at 64, Was Consulting Engineer

PHILADELPHIA—Charles S. Leopold, veteran consulting engineer who was internationally noted for his work in the air conditioning, heating, and ventilating fields, died Nov. 24 at the University of Pennsylvania hospital after suffering a heart attack while attending the Pennsylvania - Cornell football game. He was 64 years old.

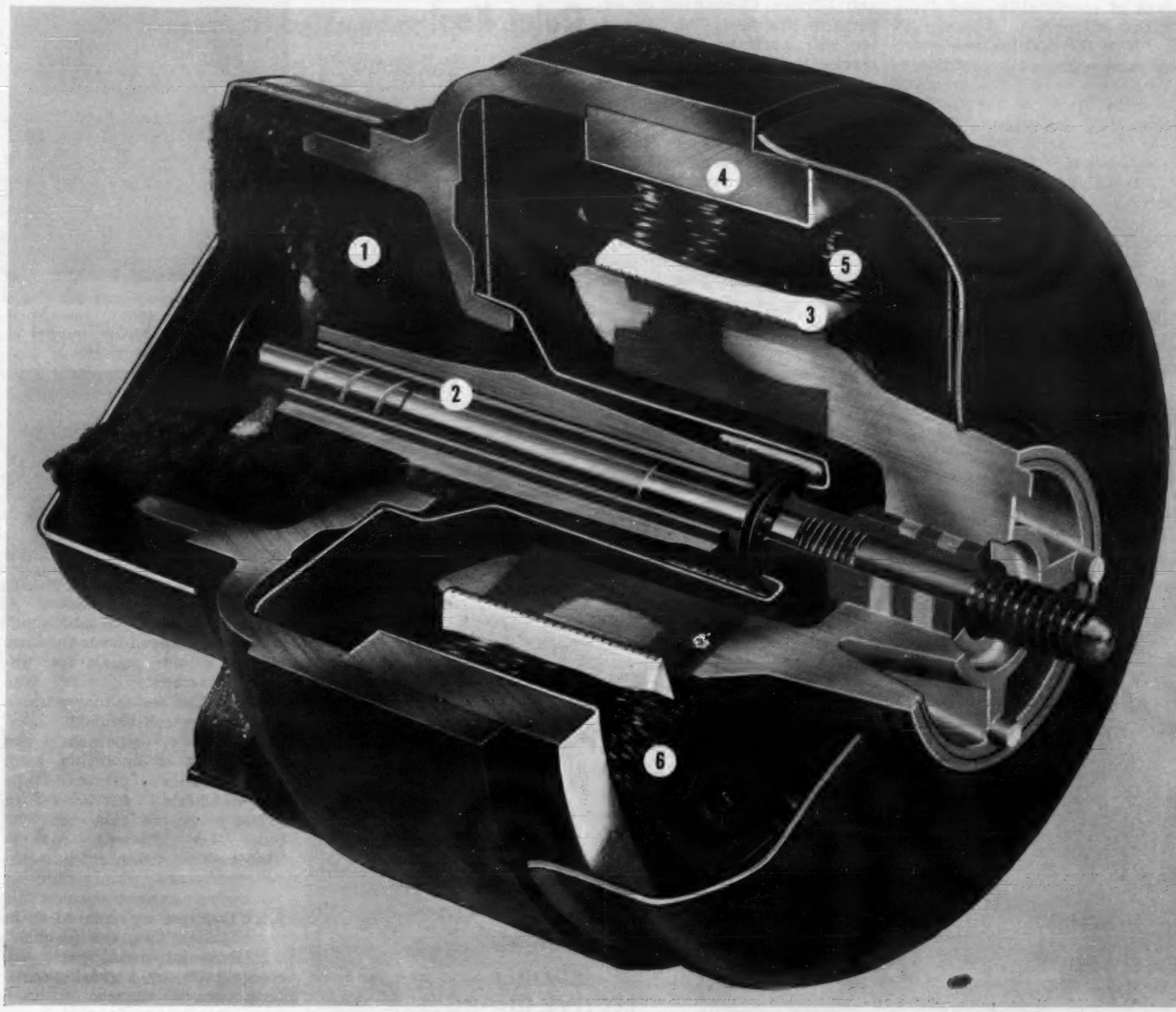
Leopold was founder and head of the firm which bears his name—Charles S. Leopold Engineers, Inc. He established his consulting engineering office here in 1923. He was the designer of many air conditioning projects for theaters, hotels, schools, department stores, industrial plants, and office buildings.

Co-author of a study on air filtration for asthma-hay fever relief, Leopold wrote technical papers on tobacco smoke control, comfort conditions, panel cooling, and thermal storage. He was a fellow in the American Society of Heating & Air-Conditioning Engineers and a past president of the American Society of Refrigerating Engineers, predecessor societies of the American Society of Heating, Refrigerating & Air-Conditioning Engineers. In 1955, he received ASHAE's F. Paul Anderson medal.

Surviving are his wife, Marian, and three daughters.

## Dutcher Heads MWIA

NEW YORK CITY — F. E. Dutcher, vice president of Johns-Manville Sales Corp., was elected president of the National Mineral Wool Insulation Association at its annual meeting in White Sulphur Springs, W. Va.




**1**
Tripled supply of oil, now standard on all models. Gives added assurance of long, maintenance-free life.

**2**
Improved bearing system means same motor rating can do a bigger job, or same job with longer life.

**3**
New integral insulation system improves motor life and dependability; reduces noise.

**4**
New punching design results in up to 20 percent higher operating efficiencies.

**5**
Alkanex* insulation on wire provides superior resistance to heat aging, giving longer life.

**6**
Multi-function Surge Test adds new levels of quality control to assure design excellence is retained through the manufacturing process.

*Registered Trademark of General Electric Co.

The inside story of . . .

# SIX ADDED VALUES IN NEW GENERAL ELECTRIC FAN MOTOR

Now you get that extra measure of dependability with General Electric 51-frame, unit-bearing shaded-pole fan motors. And you get it without a change in the familiar, functional exterior. Four-pole, totally enclosed ratings are: 1.5 to 16 watts, 60/50 cycles, 115 and 230 volts, single phase.

Six significant motor improvements sum up to added value in your products:

**1. TRIPLED OIL SUPPLY.** Now a standard feature—formerly popular as an extra—is the tripled oil supply for greatly extended life. Improved oil formula gives greater lubrication life over a wider temperature range.

**2. IMPROVED BEARING SYSTEM.** A sleeve bearing with superior finish and high load-carrying capacities is now used on General Electric fan motors. The same motor rating can now drive a heavier fan or drive the same-size fan with longer life.

**3. INTEGRAL INSULATION.** A new concept in stator insulation—integral insulation—provides significant improvements in insulation life, moisture resistance, and quietness of motor operation. The stator core is bonded with special high-dielectric-strength resin. This gives integral insulation a tested life expectancy many times that of conventional paper-slot insulation.

**4. INCREASED EFFICIENCY.** A new punching design results in up to 20% increase in operating efficiency, thus lower current drain, less watts input for the same job.

**5. SUPERIOR ALKANEX INSULATION ON WIRE.** Another component of the General Electric motor insulation system is Alkanex insulation on the wire. Superior resistance to heat aging means 14 times greater life expectancy than previous insulation.

**6. NEW MULTI-FUNCTION SURGE TEST.** Every General Electric fan motor is thoroughly tested before, during, and after assembly. And now a new multi-function surge test checks for insulation grounds, shorts, opens, resistance, continuity, and reversed polarity.

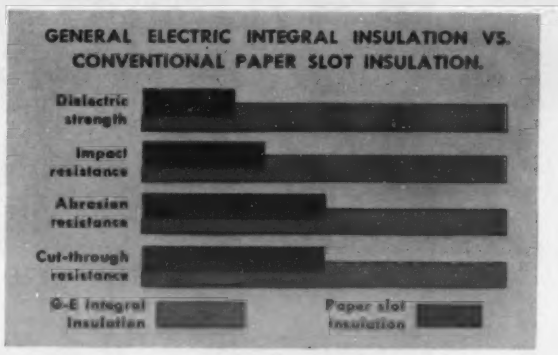
The improved General Electric fan motor is designed for applications demanding a long-life motor operating for its entire life without maintenance of any kind. This motor is best suited to power condenser and evaporator fans on food and beverage coolers, vending machines, walk-in coolers, condensing units, frozen food and ice cream display cases, and domestic freezers and refrigerators.

**DON'T FORGET THESE BASIC BENEFITS**

In addition to the new "added values," remember these basic benefits you receive with General Electric 51-frame motors:

1. FAN BLADE HUB IS PART OF THE MOTOR
2. EASY INSTALLATION OF FAN BLADE
3. ALL MOTORS TESTED BEFORE SHIPMENT
4. COMPLETE LINE OF ACCESSORIES
5. RELIABLE DELIVERY
6. APPLICATION ASSISTANCE
7. NATION-WIDE LOCAL SERVICE

Ask your General Electric Sales Engineer for more information on the improved fan motor and how it can be applied to your refrigeration products. Or fill in coupon.




**Superior on four important counts—that's the General Electric integral insulation system. Compared to conventional paper slot insulation, integral insulation has: four times the dielectric strength; three times the impact resistance; twice the abrasion resistance; and twice the cut-through resistance. And, unlike paper slot insulation, it is completely impervious to humidity.**

To: General Electric Co., Section C632-17, Schenectady 5, New York.

Please send me complete data on 51-frame shaded-pole fan motors.

NAME_____

TITLE_____

FIRM_____

ADDRESS_____

CITY_____ STATE_____

*Progress Is Our Most Important Product*

GENERAL ELECTRIC

## NEMA--

*(Continued from Page 1, Col. 3)*

working group. All of our members have the authority to act —and we do!"

In listing the more important of the division's accomplishments, Travis said, in part: "We have revised the NEMA standard for computing the food-storage volume and shelf area of refrigerators.

"This should end a great deal of confusion, for competition had led to a situation in which it sometimes was difficult to know what advertised cubic-foot figures meant—gross, net, volume of foods stored, or what. From now on, we'll talk strictly in terms of net volume—nothing else!

"We've taken a big step forward in promotion. In the past, each section ran its own promotion or advertising program with its own agency. There was lack of coordination, and duplication of costs.

"Now the division has selected one agency for coordinated promotion work. This agency is Sumner Rider & Associates, a firm that has done a fine job on dishwashers and refrigerator-freezers.

"In addition to these two sections, ranges, water heaters, room air conditioners, and electric housewares will sponsor programs in 1961. Altogether, $257,000 has been approved.

"Our statistics are going to be more useful. We may employ outside consultants to arrive at a formula for improving and verifying the Statistical Committee's forecasting . . . and to establish an industry base.

"We have set up a special Tax Committee, which will formulate policy on Federal, state, and local tax matters. It will interpret government rulings and follow their execution.

"We have organized a Parts and Service Committee of experts in this field. The committee will work to improve the service problem with an eye to offsetting unfavorable publicity in this area. Two meetings have already been held.

"Our Finance and Budget Committee has reviewed NEMA method of billing members . . . and has recommended a revision to bring estimated billing at the first of the year more closely in line with eventual re-allocation and re-apportionment."

## Mueller Climatrol--

*(Continued from Page 1, Col. 1)*

1961 and continuation of growth of residential cooling market.

Top executives of Worthington spent Wednesday, Nov. 30, at the operations meeting here. Mueller personnel presented summary reports on 1960 operations and discussed forecasts, budgets, and specific objectives.

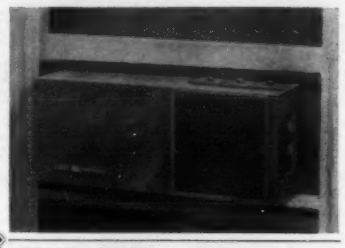
## Quiet Kool--

*(Continued from Page 1, Col. 1)*

capacities from 7,000 to 16,000 Btu and reverse cycle heat pump units," the company said. "A number of design advances have been included in the 1961 line which will make for quieter operation, improved appearance, and higher capacities."

Model 7A9C is a 1-hp unit with an announced cooling capacity of 7,000 Btu. It is equipped with staggered coils, "squirrel - cage" pressure - type blower fans, two - speed fan motor, single selector switch to control all air conditioning functions, automatic thermostat, permanent filter, and a heavy zinc-coated steel cabinet finished in corrosion-resistant baked enamel in two-tone beige-brown.

"With its automatic-mount feature, it can be installed in minutes without the use of any tools," the company claims.



QUIET KOOL convertible casement window air conditioner. ABOVE, mounted in casement window; BELOW, installed in double-hung window.

The 1961 "Kool-Mount" Series is equipped with anodized aluminum side panels for "instant installation," it was stated. "This series incorporates specially shock-mounted compressor for quietness and smoothness in operation, twin 'squirrel - cage' pressure - type blower wheels to further reduce noise, staggered tube coil systems for efficient cooling, 'Robot Control Center,' automatic thermostat, and slide-out permanent cleanable room air filter that can be removed without disassembling the front.

"All major metal parts are constructed of corrosion-resistant, heavy zinc-coated steel and cabinets are finished in attractive harmonizing baked enamel with high-impact front panel framed in steel."

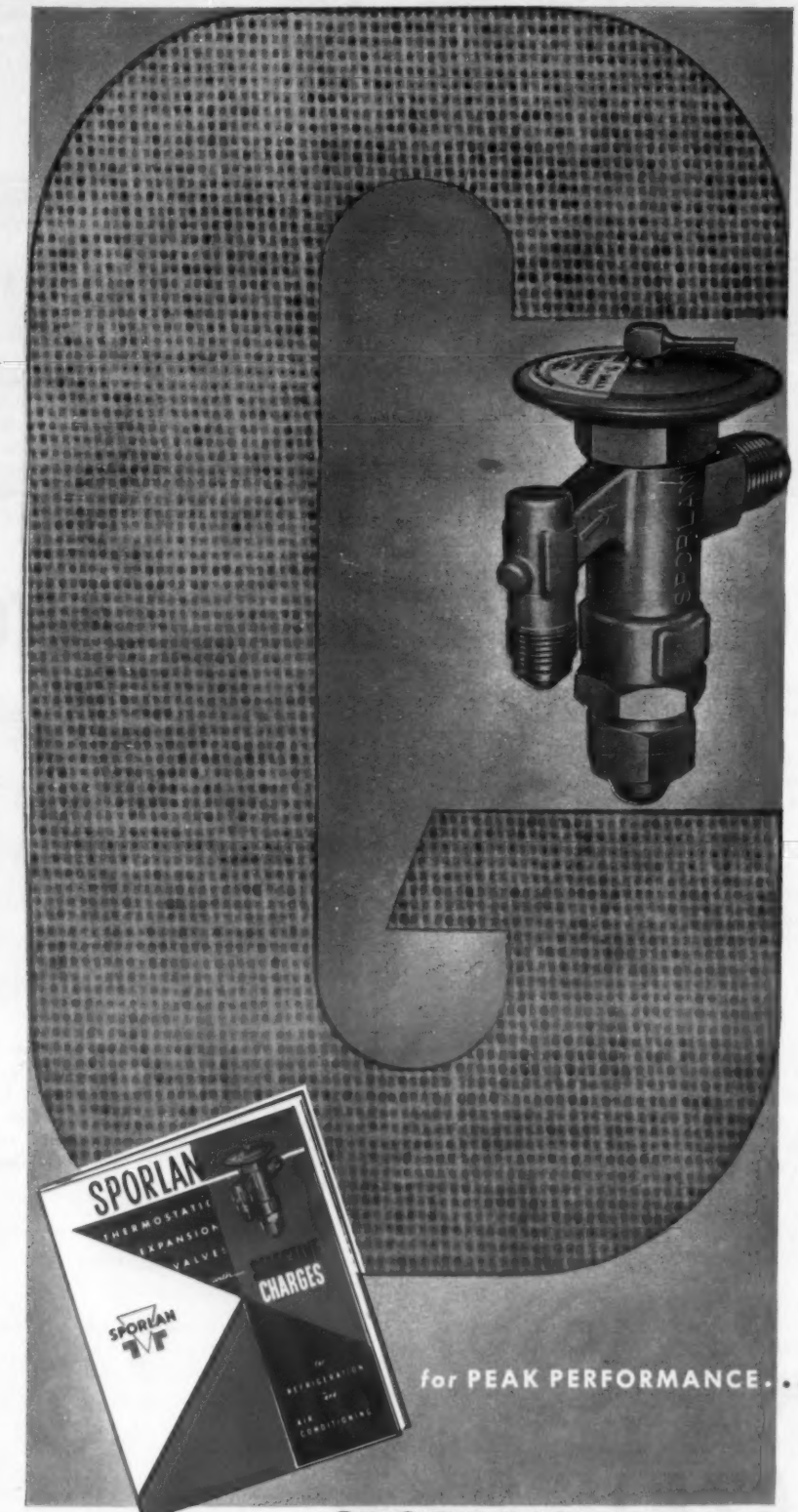
All models also available for through-the-wall installation.

**QUIET KOOL 1961 AIR CONDITIONERS**

| Model | *Btu Capacity Cooling | Hp | Volts-Amps |
|---|---|---|---|
| **Convertible Casement Window Air Conditioner** | | | |
| 7A9C | 7,000 | 1 | 115- 9.5 |
| **"Kool-Mount" Series** | | | |
| 7A7A | 7,000 | 1 | 115- 7.5 |
| 8A1A | 8,500 | 1 | 115-12.0 |
| †10A2A | 10,000 | 1 | 230- 9.0 |
| 10A1A | 10,000 | 1 | 115-12.0 |
| †13A2A | 13,000 | 1½ | 230- 9.5 |
| †15A2A | 15,000 | 2 | 230-11.0 |
| †16A2W | 16,000 | 2 | 230-12.0 |
| **"Kool-Mount" Reverse Cycle Series** | | | |
| | *Btu Capacity Heating | | |
| 8A1A/R | 8,200- 8,500 | 1 | 115-12.0 |
| 10A2A/R | 9,500-10,000 | 1 | 230- 9.0 |

*Capacity based upon Engineering samples tested in accordance with NEMA Standard.

†Available for 208-volt operations as Models 10A8A, 13A8A, 15A8A, and 16A8W respectively.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the No. 1 choice for Refrigerated Cases,
*utilize*
SPORLAN SELECTIVE CHARGES...
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**SPORLAN "C" CHARGE**
for Suction Temperatures Above ZERO

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for Extremely Low Temperatures

More engineering features are incorporated in the Sporlan G valve than in any other valve... yet the basic design has always been sound... and has never been changed.

Modifications will always be made, but only to improve the valve... never to change it.

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**Handy Tube Bender**
**Smoothly Bends any pipe or Tubing ⅜"-1⅛" O. D.**

• Just a twist of the wrist assures perfect, even bends — right angle, any angle, U and offset. Save enough on ONE job to pay for your HANDY BENDER.

See your supply house—or write for free folder today.

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## NWAHACA Humidification Study Group Forms, Establishes Plan of Operation

PICTURED above are those who attended the organizing meeting of the Humidification Study Group held here at the Hopkins Airport hotel. From left to right are: Russell W. Geisler, president, Skuttle Mfg. Co.; Joseph Perlman, vice president, Auto-Flo Corp.; William M. Myler, Jr., chairman of the NWAHACA's Installation Codes and Equipment Standards Committee, and manager of the Product Design Section, Janitrol Heating & Air Conditioning Div., Midland-Ross Corp.; William H. Wentling, director of engineering, the Lau Blower Co., who is chairman of the new Humidification group; John A. Selvaag, chief development engineer, Research Products Corp.; Warner W. Martin, assistant chief engineer, Viking Air Products, Div. Lau Blower; Kenneth Fourner, sales manager, Skuttle Mfg. Co.; and James M. Martin of the National Association. Standing is Herbert T. Gilkey, director of the technical services of the National Association.

* * *

CLEVELAND — Announcement of a Humidification Study Group by the National Warm Air Heating & Air Conditioning Association has been made by James M. Martin, managing director of the association.

At an organizational meeting held at the Hopkins Airport hotel, the project group adopted the following study plan for examination of controlled humidity during heating season:

(A) What is desired humidity range; (B) factors affecting moisture requirements; (C) procedure for determining moisture requirements, including method of measurement; (D) types of equipment available; (E) equipment selection considerations and recommendations.

Assigned to each of the above study sections were: Section A, John Selvaag; Section B, Warner Martin; Section C, Joseph Perlman; Section D, Paul Herr; and Section E, Russell Geisler.

Not in attendance but members of the Project Group are H. J. Carr, vice president, Maid-O'-Mist, Inc., and Paul Herr, president, The Herrmidifier Co.

Next meeting of the group will be held on Wednesday, Dec. 14, at the Hopkins Airport hotel here in Cleveland.

## Marsh Opens Full-Scale Warehousing for Eastern Seaboard

SKOKIE, Ill.—Marsh Instrument Co., division of Colorado Oil & Gas Corp., has announced the completion and full scale operation of extensive warehousing and distributing facilities at Fort Lee, N. J.

The Marsh organization reports that the complete stocks, handled by an experienced staff, is now assuring overnight delivery throughout most of the eastern seaboard area. Address of the new warehousing organization is: Marsh Instrument Co., 1209 Anderson Ave., Fort Lee, N. J.

## Westinghouse Presents Employe Service Awards

RAY SERFASS, Westinghouse air conditioning division general manager, at the rostrum presents service pins to employes. Standing left to right are: D. R. Meckstroth, marketing manager, who received pin for 5 years of service; Tom Darby, accounting manager, for 40 years of service; and Karl Wolf, manager of purchasing, for 10 years with the firm. The pins were presented at the recent Distributor Management Conference.

New Century 30 hp part-winding start motor driving reciprocating compressor. Compressor is part of an air conditioning system in an industrial test and research laboratory.

# New Century Electric motor for part-winding start

*Problem:* power company restrictions limit inrush current . . . a part-winding start motor is called for, but . . . acceleration must be smooth and quiet with no risk of stalling at two-thirds of full speed.

*Answer:* the new Century part-winding start motor.

**A special winding scheme** makes this performance possible. So now you can have part-winding start, dependable power and smooth acceleration all in the same motor. Century part-winding motors provide the most economical and dependable way of starting equipment such as fans, blowers, centrifugal pumps and compressors, as well as reciprocating compressors with unloading valves (like the one shown here). They are available in 20 to 150 hp sizes and in speeds of 1200 and 1800 rpm.

Why do Century Electric part-winding motors provide reliable power? Here are a few of the reasons: windings are dipped and baked with several coats of a high temperature synthetic varnish which protect against oil fumes, mild acids, dust and grit . . . rotors are dynamically balanced so motors run smoothly and quietly . . . rugged cast iron frame gives long life and reduces noise level . . . coils are insulated with a tough polyvinyl resin.

**For more information** on Century's complete line of motors (1/20 to 400 hp) please contact your local Century Electric Sales Office or Authorized Distributor.

**CENTURY ELECTRIC COMPANY**

**St. Louis 3, Missouri** *Offices and Stock Points in Principal Cities*

Century

60-6

# RACCA Asks Supplier Cooperation--

*(Continued from Page 1)*

the boss, that when we satisfy the ultimate user properly, it will mean more dollars to all of us.

### 'We Should Stop Bickering'

"All segments of the industry have been too selfish, and have tried to build fences around our businesses," said RACCA's new president. "We should stop bickering among ourselves and try to organize a more united effort to see that our industry gets a bigger share of the dollar that is being spent. One way to do that is to see that the buyer gets the best value for the money spent on product and service, and that means weeding out the kind of practices that results in higher costs for poorer products and services."

Commenting upon poor business practices engaged in by air conditioning and refrigeration contractors, McCarty said:

"I used to pray that a competitor who was using dishonest and unethical methods would go bankrupt — but I found that when my prayer was answered and he did go bankrupt, four other competitors, generally formed by ex-employes of the bankrupt company, would come into existence and make things just that much worse.

"So I have found that it is better to seek out your competitor and sit down and talk with him in the hopes of convincing him that doing business right and doing the job right so that the customer will be better satisfied will be a better deal for himself as well as the industry."

Another healthy swipe at the alleged direct selling tactics of both manufacturers and wholesalers was taken in the report of the Manufacturer and Wholesaler Relations Committee of RACCA, headed by Daniel M. Brown, Evanston, Ill. contractor. This report was made in the form of an open letter to manufacturers and wholesalers, read at the convention, and published in the RACCA Yearbook. It stated, in part:

### Partial Text of Letter to Suppliers

". . . This open letter, we hope, will lucidly point up the present state of our general relationships (the manufacturer, the wholesaler, and the contractor) and will suggest reasonable objectives for the future.

"In the years immediately behind us, our industry has had vast sales and profit potentials. These have been inefficiently and wastefully tapped by many of us. We now appear ready to kick aside the even larger pot of gold that appears on our horizon ahead.

"We contractors have been trying to earn our livelihoods under horrendous dog-eat-dog conditions. This is due in part to our own lack of business acumen. But erratic and destructive marketing practices on the part of a few of our suppliers have also contributed to the condition.

"As a result, even the perfectly innocent suppliers have found it increasingly difficult to profit from their sales to us. Though you, as suppliers, establish the industry's basic marketing policies, you are also largely dependent upon contractors for sales.

"As the competitive pinch grows, we contractors find it increasingly necessary to fight and bite our way out of the price corner. We sometimes find that our survival depends upon out ability to 'buy our way out' of each job, and the supplier must often be satisfied with the money that remains . . . provided that he's willing to wait 90 days for it.

"The price-trapped contractor frequently leaves the supplier with another kind of painful wound when he short-cuts an equipment installation or when he refuses proper post-installation correction or service.

### Supplier Practices That Hurt Contractor

"As manufacturers and wholesalers, you are increasing the pinch and are helping to perpetuate this vicious circle of events if you . . .

"1. Sell direct to 'chain' accounts, 'industrial' accounts or to any others not able to properly install and service your material and equipment.

"2. Consider your service costs to be the same whether you sell to one of the above or to a qualified contractor.

"3. Sell complete installations.

"4. Sell field service or maintenance.

"We know that there are many other factors that have contributed to the extreme competitive conditions we are experiencing. Relationships between architect, engineer, user, manufacturer and wholesaler have many unwholesome aspects which must be explored and corrected before our industry can reach its full potential.

"As contractors, however, we feel strongly that correction of Points 1, 2, 3, and 4 above will be the keys to the elimination of most of the other evils.

"In exchange for your prompt consideration of such action, we offer our fullest cooperation, knowledge, and influence in your quest for improved conditions between manufacturer and wholesaler and for correction of harmful attitudes and practices by the specifying and buying groups."

These are the problems and the challenge which RACCA has placed before ARI and

Bundy can mass-fabricate practically anything

RW, said Brown, and he said at both associations had own a willingness to sit wn and discuss the situation. owever, Brown raised the estion of how effectively ther association could police e actions of the individual embers, and he said that the st possible action by RACCA ght be in throwing the full ht of publicity on those who re indulging in bad practices, d in "being loud in the supt" of those who support ACCA and its program dened to promote good and d fair business practices.

RACCA again raised the issue the desire for "reasonable" warranties to the manufacturers, and Brown said that ARI had signified an intention to survey manufacturers on the current status of their extended or so-called "5-year warranty" programs.

Also brought before manufacturers was the expressed desire of RACCA contractor members for a supply of "AC&R" copper tubing of a special grade of cleanliness, this meaning specially cleaned and degreased and packaged with end seals and possibly a charge of inert gas. Further discussion of these and other subjects are scheduled for the next meeting of the RACCA-ARI joint relations committee, scheduled to coincide with the International Heating & Air Conditioning Exposition Feb. 13-16 in Chicago.

BOTH THE NEW AND RETIRING RACCA NATIONAL PRESIDENTS can say that they have brought extra brainpower to the job because both Betty McCarty (second from left) and Mabel Alexander (second from right) take an active role in the management of the air conditioning and refrigeration contracting businesses run by their husbands, Walter McCarty (left), head of McCarty Bros. Equipment Corp., River Forest, Ill., incoming RACCA president; and Tom Alexander, T. C. Alexander Co., Denver, retiring president.

### 'Exchange Seminars' With ARW Discussed

In its meeting with an ARW committee, Brown said that plans were discussed for a program of promotion of good installation practices, and for a series of "exchange seminars" in which contractors and supplies wholesalers would meet, with one group outlining its problems and aims at one seminar, and the other doing likewise at the affair at which it would be host.

### Retiring President Cites Better Relations Within Industry

Speaking as retiring president, Tom Alexander pointed to the accomplishments in the field of intra-industry relationships, calling particular attention to the praise which Rudy Berg, retiring ARI president, had given to RACCA and its program. Alexander also pointed to the work done by the Joint Industry Program Committee, a council of eight contractor associations and a union (United Association), of which Alexander is currently president.

Primary achievements of the JIPC have included an amendment to the Pittsburgh agreement under which temporary cooling would be covered in the agreement, a resolution directed to the American Institute of Architects whereby the formerly accepted 10% retention on contracts has been changed to 10% of the contract price withheld until 50% had been paid, and the development of standard specifications for temporary heating and cooling, which the AIA has accepted.

### Members Asked To Give New President More Support

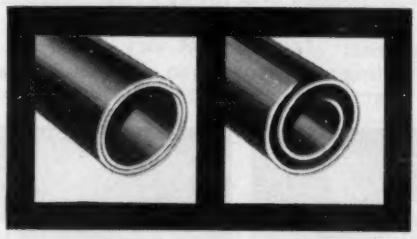
Alexander also bluntly told the RACCA members attending the convention that they must devote more individual attention to the association if they expected it to achieve the aims outlined for it. "I got mighty tired of calling up individual members on association business and winding up talking with the janitor," said Alexander, "and I hope you'll at least discuss association affairs with the new president."

RACCA's convention also received messages from the heads of, or representatives of most of the leading trade associations of the industry, and the following are some of the more

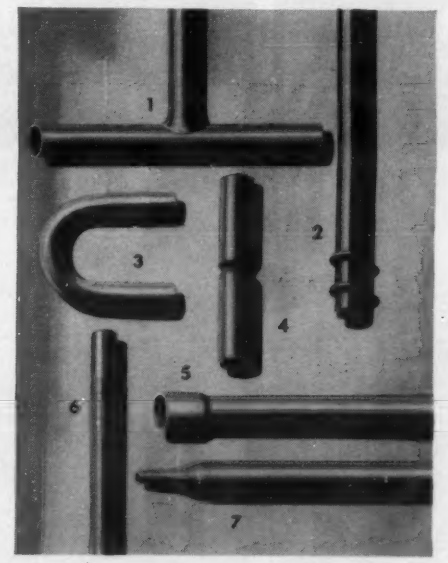
(Continued on page 17)

If you use tubing that requires fabricating—anything from simple bends to special forming and machining—it will pay you to talk to Bundy®. Many of these mass-fabricating operations have been developed by Bundy especially for refrigeration use, and one of them may solve a difficult tubing problem for you. Your parts will be mass-fabricated from Bundyweld, the leakproof *double-walled* steel tubing. Bundyweld has long been the safety standard of the refrigeration industry and is covered by ASTM 254; and Govt. Specification MIL-T-3520, Type III. Can Bundy help you? Phone, write, or wire: Bundy Tubing Company, Detroit 14, Michigan.

**BUNDY TUBING COMPANY • DETROIT 14, MICH. • WINCHESTER, KY. • HOMETOWN, PA.**
World's largest producer of refrigeration tubing. Affiliated plants in Australia, Brazil, England, France, Germany, Italy, Japan.



Bundyweld, double-walled from a single copper-plated steel strip, is metallurgically bonded through 360° of wall contact. It is lightweight and easily fabricated . . . has remarkably high bursting and fatigue strengths. Sizes available up to 5/8" O. D.




Small-diameter tubing components mass-fabricated by Bundy may be the answer to your design problem. The Bundyweld tubing shown above is: (1) saddled and soldered, (2) double-beaded, (3) bent to minimum radius, (4) grooved, (5) expanded, (6) precision-ground, (7) swaged.

**BUNDYWELD® TUBING**

# Inside Dope

By GEORGE F. TAUBENECK

*(Continued from Page 1)*

Air conditioning equipment hasn't been foolproof, nor have its dealers been properly trained—points which *ACH&RN* editorials have been lambasting away at for centuries, it seems like.

Moreover, summer peak loads erected by the massive inroads of commercial and industrial air conditioning have imbalanced—and, in some cases, upset—distribution schedules and profit expectations for electric utilities.

No wonder they have been reluctant to advocate residential air conditioning (which is an additional and occasionally unwelcome summer load factor).

"Especially were they dubious, because air conditioning itself has been so uncertain, disorganized, and unreliable in the past," observes this sage.

"Now, possibly, at long last we may be ready to present an honest case to these powerful people."

## *Defensive Measures and Indefensible Postures*

"Electricalities" neither have possessed nor displayed divine omnipotence, however.

They fusseted, fidgeted, and fudgeted with regard to air conditioning. They haven't pushed the panic button but, they've tended to grab at straws whenever an historical position was threatened.

Example: espousal of electrical home heating by *any* method. Ideally, electric heat should provide a winter ("juice" consumption) load to counterbalance summer cooling overloads. That fact has led to experiments.

Tentatively, and differingly (according to geography) the Electricalities have flirted with ceiling cables, baseboard panels (radiant heat, both) and reverse-cycle electrical assaults on the dominant fossil-fuel bastion of home heating.

Fact that these flirtations have created more problems than they've solved is well known to constant readers of *ACH&RN*. To recapitulate radiant-heat dilemmas too briefly, they've been bugged by:

(1) High operating costs;

(2) Unsatisfactory operating conditions—all related to stagnant air;

(3) Excessive humidity; and a sealed-in *claustrophobia* for the customers.

## *Heating Can Be Beautiful*

Enter, center front stage, a valiant new knight in impeccable shining armor, to wit:

*Ducted electric heat*—the precursor of foolproof residential air conditioning. Herewith, we present just a few of its advantages.

1. Simple to manufacture, install, service, and use.
2. Readily adaptable to addition of a summer cooling unit.
3. Balances heat, humidity, and cleanliness—and contains and in-built SAFETY factor.
4. It's exceptionally quiet.
5. It seldom fails; rarely needs service.
6. Inside air is *fresh,* because it pulls outside air in, and filters it pleasingly.
7. It's amenable to such accessories as electrostatic and activated charcoal superfilters, ionization devices, Sterilamps, etc., etc.

"Ducted electric heat is the most versatile of all home comfort systems," declares John Norris. And he should know, because he builds all types.

## *Jumping-Joy Jackpot*

Having established the above facts, after thoroughgoing field and factory research, what did John Norris do about translating them into action?

In sequential order, here's what this astute gentleman (a Tau Beta Pi key-wearer from M.I.T.) did:

1. He tried to *create competition* (how oddball can you get?) by espousing the ducted electric heat concept in speeches to preternaturally suspicious oil-and-gas-heat manufacturers and dealers.

2. He educated his own 6,000 Lennox dealers (theme: "You and I aren't selling fuels—we're selling air movement").

3. He enlisted the interest of Public Utilities in what ducted air movement could do for *them.*

This third endeavor could become the jackpot for residential air conditioning.

Massively and glacially do they move, these utilities. But when they do, they can move Masses of Consumers excitingly.

Massive consumer acceptance of clean, pleasant, healthful, all-year 'round home air could be triggered by "Electricality" promotion. Shall we gather by the river?

## *Story of the Week*

Alfred Schweinberg, an employe of the Chicago Blower Corp., arrived at O'Hare International airport expecting to board a helicopter for Chicago's Midway airport one day last week.

There he was supposed to catch a plane for Minneapolis, and deliver a cardboard carton of replacement parts for an air conditioning customer there.

Someone noticed a message printed in grease pencil on the carton, and hurried to summon police. Minutes later, they apprehended Schweinberg.

Schweinberg was astonished when shown the lettering. "Some shipping clerk must have thought he was being very funny," he said.

Chicago Blower officials were inclined to believe him. Fred Gohl, president of the firm, avers that Schweinberg is a conscientious man, not prone to pranks or practical jokes.

"Do you mean he missed his flight?" Gohl asked. When told that he had, Gohl was aghast.

"Our customer probably still is waiting for him at the Minneapolis airport."

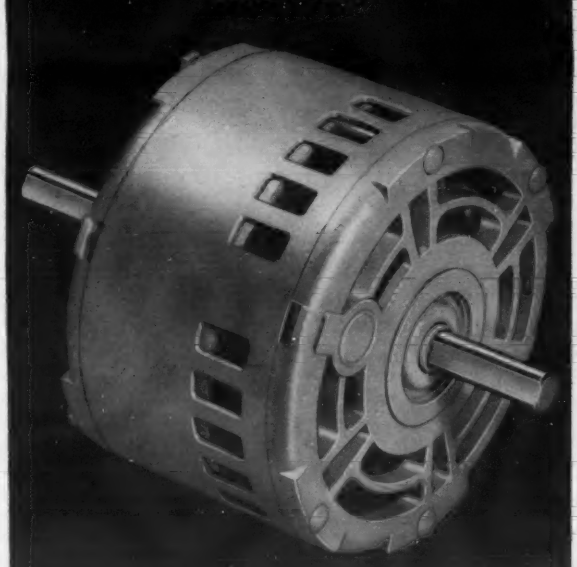
Federal Bureau of Investigation agents found that the box contained what Schweinberg said it did—replacement parts for an air conditioning system.

They, too, were unhappy about the incident—and the lettering, which read:

"Time bomb. Set to go off at 2:59 p.m."


Where heat is a problem . . . or efficiency a limitation

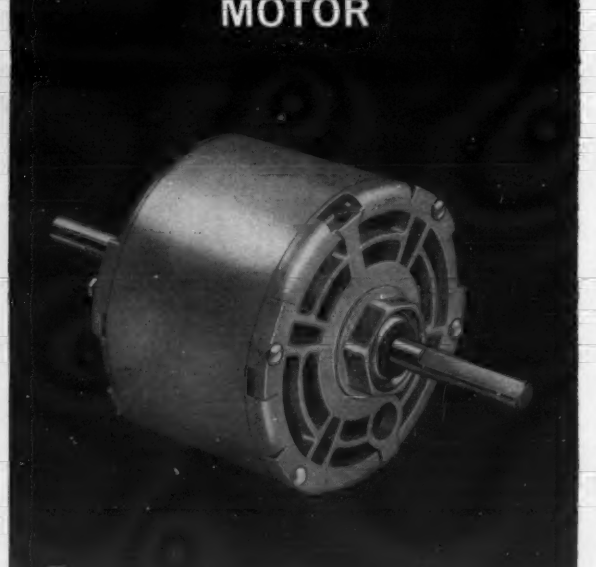
SPECIFY THIS NEW LEECE-NEVILLE SPLIT CAPACITOR MOTOR



| Model 6E (6 pole—1050 rpm)—Quieter and cooler running than any current design motor, this new Leece-Neville PSC motor can put an end to your problems of high current drain with low current requirements. New design features assure highest power factor and efficiency in room air conditioning use. | Model No. | Ratings |
|---|---|---|
| | 806E | 1/2 |
| | 646E | 1/3 |
| | 486E | 1/4 |
| | 406E | 1/6 |
| | 326E | 1/10 |
| | 246E | 1/15 |

If you need rugged strength and economy

SPECIFY THIS LEECE-NEVILLE SHADED POLE MOTOR



| Model 6D (6 pole—1050 rpm) Why pay for more motor than you need. This L-N shaded pole motor combines rugged strength, economy and quiet, smooth running power. It's ideal for air conditioning, refrigeration or heating service. | Model No. | Ratings |
|---|---|---|
| | 806D | 1/4 |
| | 566D | 1/6 |
| | 486D | 1/8 |
| | 406D | 1/10 |
| | 326D | 1/12 |

**New Leece-Neville motors offer you high power, high efficiency, long life**

More than 50 years of experience in the manufacturing of motors and other quality electrical equipment stands behind Leece-Neville's new line of shaded pole and permanent split capacitor motors, with basic units ranging from 1/150 to 1/2 hp. Leece-Neville's fully staffed engineering department can recommend or help you adapt a basic motor, or design a special motor to your specifications. Modern manufacturing facilities assure delivery to your schedules and lead times. For detailed information, just mail the coupon at right.

**Information on 2 pole, 4 pole and other 6 pole motors upon request.**

QUALITY ELECTRICAL EQUIPMENT — Leece-Neville — SINCE 1909

**The Leece-Neville Company, Dept. AC-12**
**Georgia Division, Gainesville, Georgia**

Please forward details on shaded pole and permanent split capacitor motors.

*Name*_____ *Title*_____

*Company*_____

*Address*_____

*City*_____ *Zone*____ *State*_____

*Product Manufactured*_____

# OHI To Participate In Industry Exhibit at 1964 World's Fair; Convention Plans Set

NEW YORK CITY—A major development coming out of the recent shipboard meeting of the board of directors of the Oil Heat Institute of America was approval of OHI's participation in an industry exhibit at the 1964 New York World's Fair.

During the meeting aboard the *S.S. Queen of Bermuda,* the board approved a pledge of $25,000 to cover OHI's share of this project. The following actions were approved:

- Plans for the 39th annual convention of OHI, April 23-26, 1961, at the Statler-Hilton hotel, Washington, D. C. Francis Schuster of Troy Oil Co., Indianapolis, has been appointed chairman of this convention.
- Plans for the 40th annual OHI convention and 24th National Oil Heat and Air Conditioning Exposition, both to take place at Conrad Hilton hotel, Chicago, April 8-12, 1962.
- The interviewing of candidates for the position of midwest field representative for OHI.
- The filling of 15 new vacancies on the OHI board of directors. Ten new directors will come from the Distribution Div.; five from the Manufacturer Div.
- The setting up of an Oil-Powered Hot Water Heater Section in the Manufacturer Div. Murray Green, of the Trageser Co., will serve as chairman of this section.
- An expansion of OHI's market research reports, to include hot water heater shipments along with other oil-burning equipment.
- An air pollution research study, under the direction of Prof. Charles Pesterfield of Michigan State university. Purpose of the study: "To provide definitive data on the determination of effluent factors, the lack of which has seriously hampered the industry in its effort to get fair and reasonable treatment from local and regional air pollution control agencies." It is expected that the U. S. Dept. of Health, Education and Welfare will make a substantial grant to support this research.

At the meeting, the following companies were admitted as members of the Manufacturer Div. of OHI: Trageser Copper Works, Inc., Jamaica, N. Y.; Farris Combustion Controls Corp., Palisades Park, N. J.; Watermatic Mfg. Co., Bellmore, N. Y.; William Wallace Co., Metalbestos Div., Belmont, Calif.

The following incorporated dealer groups were accepted as chapter members of the OHI Distribution Div., bringing the number of chapters to the all-time high of 69:

Chatham County Fuel Oil Dealers Association, Savannah, Ga.; Mercer County Petroleum Distributors Association, Mercer, Pa.; Centre Oil Dealers, Inc., Snow Shoe, Pa.; Western Pennsylvania Oil Heat Association, Donora, Pa.

The following individual companies were approved as new associate members of the distribution Div.:

Geen E. Waters, Bristol, Va.; Grecco Fuels Ltd., Ontario, Can.; The Winnipeg Supply & Fuel Co., Ltd., Winnipeg, Manitoba, Can.; Westland Oil Co., Minot, N. D.; Crystal Oil Ltd., St. John, N.B., Can.; H. G. Francis & Sons, Ltd., Ottawa, Ont., Can.

In a report of the growth and progress of the OHI Insurance Trust, it was stated that in the past two-and-a-half years, life insurance coverage has expanded from $13,500,000 to $30,000,000.

A comprehensive report was given the board by Robert Hundley, OHI's Education Committee chairman. Since the first service technician's examination was given in Miami, Fla., a year ago, approximately 1,400 tests have been given. The results are being studied carefully, to provide manufacturers with full information on educational needs regarding various components of heating systems.

Hundley reported his committee is now working on a new Installation Technician's Examination.

On the subject of education, it was announced that an additional OHI Film Strip, on "Burning Qualities of Heating Oil" is now in preparation. This is a joint project of OHI and a group of major oil companies.

Robert D. Myers, of OHI Heat Industry News Bureau, delivered a report of the exceptional growth of OHI publicity activities during the past six months, including the widespread use made of the Diamond Jubilee theme in scores of major oil heat markets.

## *Rittling Markets Electric Baseboard, Floor Insert Heaters*

BUFFALO—A complete line of electric baseboard and floor insert heaters is being marketed by The Rittling Corp. here, the firm announced.

These electric heaters have been manufactured by Rittling for several years and have been marketed under the name "Electrovector," it was pointed out. Rittling electric heaters will be available through the nationwide Rittling sales organization in addition to representatives of the Electrovector Corp., the announcement said.

Baseboard units are made in 500 to 2,000-watt capacities and widths from 2 ft 1½ in. to 8 ft 1½ in. Floor insert models are offered in 350 and 750-watt capacities and 14-in. and 30-in. widths. Cabinet convector types are also available in 1,000 and 2,000-watt capacities and 24½-in., 36½-in., and 48½-in. widths.

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Beam Clamps
for Mounting Hangers
on I-Beams

Mounts Minerallac hangers No. 0 to No. 6 on I-Beams without necessity of drilling holes. Have ¼-20 tapped holes. Fits beam flanges up to ½" thick. Low cost. Send for literature.

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- Without BUILT-IN PRESSURE LIMITING ELEMENT—for installations not requiring protection against motor overload—denoted as #402-2F

Field proven models for all these capacities:
REFRIGERANT-12
¼, ½ and 1 Ton
REFRIGERANT-22
½, ¾ and 1 ½ Ton
REFRIGERANT-40
½, 1 and 2 Tons

These are your benefits
√ LIQUID CHARGE—Install in any position.
√ WIDE RANGE SUPERHEAT ADJUSTMENT—2 to 20° F—Easy External adjustment fits Standard Service Wrench.
√ REVERSE SEATING—Assures smooth feed at all loads.
√ RUGGED CONSTRUCTION — Brass, Bronze and Stainless Steel.
√ REMOVABLE STRAINER—At inlet—Easy to clean.
√ CAPILLARY AT SIDE—Allows more head room for mounting.

IF THERE'S ROOM FOR YOUR HAND . . . THERE'S ROOM FOR AN ALCO 402

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The one complete line of refrigerant controls: Thermostatic Expansion Valves • Refrigerant Distributors Solenoid Valves • Suction Line Regulators • Flooded Evaporator Controls and Reversing Valves

## They'll Do It Every Time

by

Jimmy Hatlo

C'N YA IMAGINE··· MY DOPEY BRUDDER-IN-LAWR WANTED ME TO QUIT SELLIN' AND TAKE A DESK JOB WHERE HE WORKS··· A BOTTLING PLANT! A CRUMMY NINETY BUCKS A WEEK!
ALL I KNOW IS NO FUTURE MILLIONAIRES ARE SITTIN' AROUND FOR THREE HOURS INHALING SIX SAUCERS OF COFFEE···
WHAT'S THE MATTER WITH A DESK JOB? JUST SO'S THEY GOT SOMETHING TO PUT THEIR ELBOWS ON···
THE NATIONAL PITCHMEN'S MAG SAYS THE NEXT NEW CROP OF MILLIONAIRES WILL BE SALES-MEN···
WHAT'S PLAYIN' IN THE MOVIES THAT WE HAVEN'T SEEN···YA KNOW?
NINETY BUCKS A WEEK! HE BORROWS MORE THAN THAT
THINGS ARE SO TOUGH THEY MAY HAVE TO GO TO A MOVIE THEY SAW BEFORE···
FEELING FOR THE SALES-MEN WHO ARE SITTING OUT A FEW CALLS··· THANX AND A TIP OF THE HATLO HAT TO PROF. GEO. MILES, 2372 PRAIRIE AVE., MIAMI BEACH, FLA.
10-20
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# The Little Woman Isn't Humdrum —But She May Be Bored

RECENTLY the mythical American Woman has been discovering that the humdrum existence from which she once sought escape is becoming less hum and drum.

Early this year radio broadcasting networks recognized this fact when they drew the final curtain on "Ma Perkins" and "Life Can Be Beautiful."

Our lady of the house no longer needs the solace of that soap opera dream world wherein the men were bumbling idiots and woman conquered all—albeit with kindness and understanding, natch.

***Accelerated production*** of consumers goods have helped to make the housewife's job progressively easier.

Women now have more money to spend on wife-saver products, and more leisure in which to enjoy them, than at any previous time in recorded history.

***Our Typical Husband,*** you see, being *neither* a tyrant *nor* a bumbling idiot, directs more and more of his discretionary dollars into products which lighten the work-load at home for his wife.

"All of us," corroborates G-M Vice President Nelson Dezendorf, "are inclined to talk about this country's new mass leisure class.

"We can see its arisal in increased purchases and use of automobiles, boats, barbeque equipment, swimming pools, television sets, and foreign travel.

"We can understand it in terms of man's shorter workweek. But how about woman's workweek?"

How much actual time does a sometimes-home doll save by using a full line of the newest wifesaver products?

Recent studies by experts in Frigidaire's home economics department show a saving of *nineteen and three-quarters hours in one average week* for a wife fortunate enough to possess a completely automated home.

Translated in terms of waking hours, that's more than one full *day* which can be diverted and devoted to more important family, civic, or personal responsibilities.

"We are offering the automated homemaker more time, plus the freedom to enjoy and use it. These are priceless commodities," continues interesting Mr. Dezendorf.

"Why, then, is it so difficult to induce families which are financially able to buy the latest, most efficient labor-saving equipment to up-date their homes so that they can enjoy these newfound maximum savings in time and labor?

***"Surprisingly,*** it is not always a matter of family budget. Mrs. Housewife knows that newer machines will do more things, will cost relatively less to own and operate, and will save her valuable time.

"More often than not, there is money in her budget with which she can make the replacement. But:

"She not only has a refrigerator that refuses to wear out, but she also has a refrigerator which has become a member of the family."

***This member-of-the-family*** relationship develops partly because many mechanical devices frighten this mythical Typical Housewife.

The fact that each new model is demonstrably easier to operate than its predecessors doesn't allay her suspicions one bit.

ERGO: She likes and trusts her old, familiar refrigerator, freezer, etc. She isn't about to exchange them for an unfamiliar new model.

Note well, though: she does have "disposable income" at her command. Isn't she ripe, therefore, for an approach by an air conditioning salesman?

Isn't today's sad plight of the home appliance business—which is suffering from an overdose of consumer boredom—a concomitant opportunity for the glacial residential air conditioning industry?

Residential air conditioning IS something new. Trade-ins aren't involved. And Mrs. Housewife doesn't have to operate the equipment. It's automatic.

***Thank you, Nelson Dezendorf,*** for your cogent analysis and welcome clues for home air conditioning salesmen.

Mrs. Housewife may be bored, but air conditioning isn't boring. It's the most exciting new field for home improvement to be found anywhere.

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*'The Conscience of the Industry'*

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"God grant that not only the love of liberty but a thorough knowledge of the rights of man may pervade all the nations of the earth, so that a philosopher may set his foot anywhere on its surface and say: 'This is my country.' "—*Benjamin Franklin.*

# Thermoelectric Fact and Fiction

For an engineering and scientific topic, the development of thermoelectric refrigeration has resulted in a strange assortment of fact, opinion, prejudice, and salesmanship. Depending on who is talking, thermoelectric freezers are around the corner or they are nowhere in sight.

***After a rash*** of enthusiastic publicity—during which we were shown prototypes of hostess carts, bottle warmers, specific gravity baths, air conditioned rooms, refrigerators —thermoelectric news has leveled to an occasional announcement of a government contract, a new semiconductor production technique, the acquisition of thermoelectric facilities by companies in conventional heating and cooling business.

Where, then, does thermoelectric technology stand now?

For one thing, it is now obvious that the implied, and sometimes claimed, immediate development of romantic consumer products has not occurred—and is not likely to occur for many years.

Nevertheless, the interest generated by these first claims and demonstrations has been advantageous. Thermoelectric principles and simple devices have left the laboratory and are being studied by applications engineers. Government and Military interest has led to contracts which will assuredly add to the store of knowledge.

***Thermoelectric devices*** are already performing tasks impossible to accomplish by any other known means—in missiles, electronic assemblies, infrared detection systems, but all of these are specialized, even unique, applications with small cooling loads.

As indicated in this week's Tech Center discussion, however, the likelihood of thermoelectric major appliances like domestic and commercial refrigerators and air conditioners is remote.

# TECH CENTER

*by*
*FRANK J. VERSAGI*

## THERMOELECTRIC REFRIGERATION: *State of the Art*

**Thermoelectric refrigeration poses no threat to domestic and commercial refrigeration and air conditioning. In such consumer goods, conventional products do the job at a lower first cost and a lower operating cost than are foreseeable with electronic cooling, and there is very little practical hope that any breakthrough in materials or method will alter this picture.**

This is the firm belief of one of the country's leading authorities on thermoelectric refrigeration, Royal S. Buchanan, assistant director of appliance engineering and research, Kelvinator Div., American Motors Corp.

In the most practically pregnant discussion of the subject ever covered by the NEWS, Buchanan showed that there are many commercial and military applications where first cost and efficiency are relatively unimportant compared to the need.

Speaking to the Detroit chapter of ASHRAE, he discussed thermoelectric materials, assembling processes, power supplies, and performance.

Right off, Buchanan demolished the popular notion that a breakthrough in semiconductor materials will make thermoelectric refrigeration immediately practicable in normal applications. "If the materials were free, it wouldn't make much difference in the cost of thermoelectric appliances, since the cost of elements is only a small part of the total cost of a device."

Progress in the development of materials has been fairly rapid, but there is a hint that scientists may be reaching a plateau, or slower rate of improvement. (Thermoelectric efficiency of materials is expressed as a **Figure of Merit or Z-factor.** The higher the Z-factor, the better the material.)

In 1955, materials were available with Z-factors on the order of $1.3\times10^{-3}$. By 1958, materials could be obtained with a Z-factor of $1.6\times10^{-3}$. In 1959, the figure of merit reached $2.3\times10^{-3}$ and a few samples were available of materials with Z-factors of $3.5\times10^{-3}$.

It seems likely that materials in 1960 will be available with a $3.0\times10^{-3}$ Z-factor. There has been some claim to development of a semiconductor with a $4.0\times10^{-3}$ figure of merit, but verification has not been given, according to Buchanan.

So far, the materials used for thermoelectric refrigeration have been the bismuth tellurides. Most authorities agree that the probable upper limit of Z-factor for these materials is about $5.0\times10^{-3}$.

To be competitive in performance with available equipment in practical sizes, thermoelectric materials must become available with figures of merit on the order of $10\times10^{-3}$, Buchanan suggests. So there must be a major change in compounds from the bismuth tellurides now being used, but no known materials seem to fill the need.

**"Present materials make novel and unique applications possible. Z-factors from 5 to 10 will make small appliances practical. Figures of merit will have to exceed 10 to make major appliances possible," summarized Kelvinator's assistant research director.**

Among the present applications of thermoelectric refrigeration are infrared detector coolers, the cooling of electronic instrument components, spot cooling of commercial fluorescent lamps (increasing their efficiency by 70%), and temperature control, within extremely small tolerances, of laboratory baths.

**"These are all applications which fall below loads of 200 Btuh," which Buchanan feels is the practical limit of present thermoelectric devices.**

Materials, however, are not the limiting factor in the development of larger thermoelectric appliances. More important is the problem of power supply.

Thermoelectric devices use low voltage, high amperage direct current. The highly publicized baby bottle warmer, for example, uses 20 amps at 2 volts; a 9-cu ft refrigerator would consume 30 amps at 18-20 volts.

"Unfortunately, rectifiers do not operate efficiently at low voltages," Buchanan offered. "Power supply for a medium sized refrigerator would cost about $100. Generally, power supply alone, in thermoelectric appliances, would cost 2½-3 times a comparable compressor."

Similarly, since a thermoelectric device must reject internally generated heat as well as heat picked up from the cooling job, hot side heat exchangers cost more than equivalent heat exchangers used in compression systems.

Then there is the problem of assembly. A small refrigerator might need about 800 thermoelements. This means 1,600 soldered joints. Since the elements are in series, a break in any one joint makes the unit inoperative. A poor soldered joint can increase resistance so much that heat is generated in sufficient quantity to offset the cooling ability of the junction.

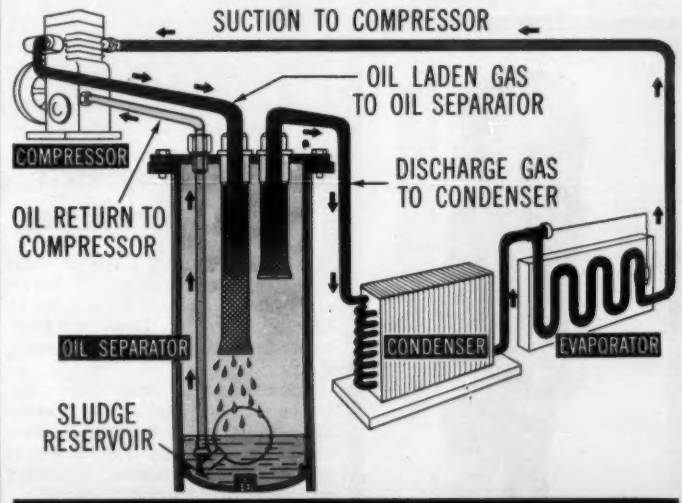
"Progress there has been," concluded Buchanan. "Present applications of thermoelectric refrigeration are many and sales volume now approaches a million dollars annually. Government-sponsored research projects will add more information to the hopper.

"But the present state of the art does not seem to include the possibility of mass produced major appliances."

Some miscellaneous thermoelectric thoughts:

- There are those who predict the use of thermoelectric elements in cascade will enable reaching low temperatures efficiently. Opposed are those who cite experience which indicates that cascading is "more effective theoretically than in practice."
- It is now possible to produce semiconductors by powder metallurgy at costs considerably lower than involved in conventional zone melting. Unfortunately, the Figure of Merit of sintered material is about half of the same material prepared by zone melting.
- High purity rare earth elements have raised hopes of new materials with higher Z-factors, but so far have proved disappointing. It is important to remember that there are many more semiconductor materials which lend themselves efficiently to thermoelectric power generation, than to thermoelectric refrigeration. Indeed, thermoelectric power generation is far more advanced as a practical concept than is refrigeration.

(See related Editorial on opposite page.)

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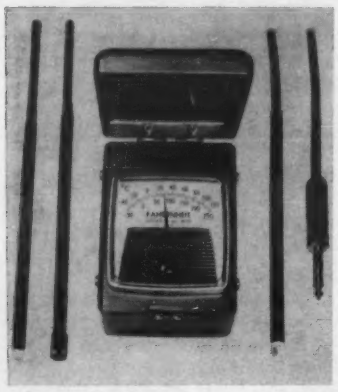
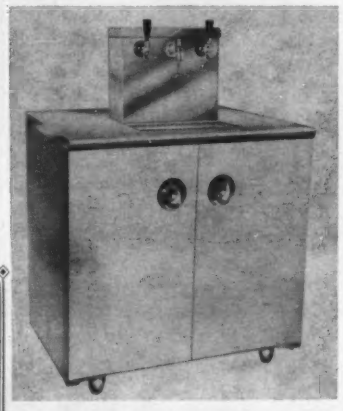
## New Temperature Measuring Device Offered



● A new type of a temperature measuring device called a "Thermo-Meter" is available from Airserco Mfg. Co., Dept. AH&RN, 435 Melwood Ave., Pittsburgh 13, Pa. The instrument comes standard with either a 2¼-in. or a 3-in.-meter.

"One of its many applications is for quickly determining the super-heat setting of thermostatic expansion valves used in air conditioning and cooling systems," the company said. "The meter operates electrically, but without batteries or external power.

"A choice of three interchangeable probes, with plug-in jack connectors are available. A side-contact probe, 15° angle, and an end-contact probe are used for contact heat measurement. A third probe responds to air temperatures. These probes permit a temperature reading to be made anywhere the tip can reach."



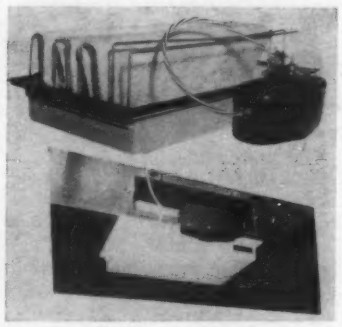
## Draft Beer Dispensers, Bottle Coolers Bowed

● Introduction of a line of draft beer dispensers and bottled beverage coolers has been announced by Glacier Mfg. Co., Dept. AH&RN, 10309 Rush St., South El Monte, Calif.

Regarding the draft beer dispensers, the company said "Forced air cooling in the dispensing tower and throughout the box by means of two blower systems, abundant refrigeration, superior insulation, and top-quality faucets, beer lines, and tapping equipment ensure top performance.

"The bottled beverage coolers," it was stated, "provide optimum cooling through forced air top to bottom cooling, and maximum bottle capacity through placement of the refrigeration coil and blower assembly at the top, up out of the normal bottle storage area."

Among other listed features are elimination of projecting hinges, handles, and mullions in the draft box.



## Humidifier Installs In Furnace Duct

● A new humidifier that installs in the duct of any standard circulating air furnace and reportedly will evaporate 8 to 10 gals of water a day has been introduced by the Terry Vap Co., Dept. AH&RN, 750 Pelham Blvd., St. Paul 14.

Installation in the duct, rather than the plenum, is said to "keep water at a lower temperature and prevent liming in the humidifier pan, float mechanism, and fill pipe, as well as preventing lime deposits throughout the house."

Evaporator plates have been replaced by a washable cloth wick with 1,260 sq in. of evaporating area. Amount of evaporation is adjusted by removing a loop of the wick, the company said.

Other features are cast aluminum tank and aluminum wire, and a plexi-glass inspection window for the duct. The humidifier is priced to retail at $59.50.

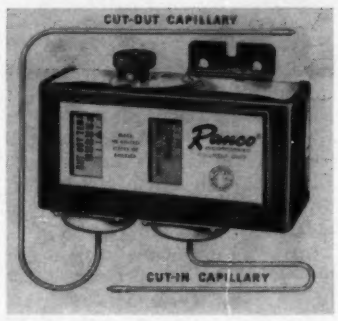
## Segment Bender Can Be Operated by 1 Man

● A segment bender that weighs 65 lbs exclusive of shoes and that can be operated by one man is being offered by Greenlee Tool Co., Dept. AH&RN, Rockford, Ill.

The company said the unit's "27-ton ram has power to spare for segment bending of steel or aluminum conduit and pipe 1¼ through 4 in.—will bend extra heavy schedule 80 pipe. It comes equipped with a hand hydraulic pump, but can be operated with power pump for faster performance. Used with a Greenlee bending degree indicator (optional), this new bender adds simplicity, speed, and accuracy to segment bending."

A few optional parts adapt this No. 777 bender to one-shot 90° bending ½ through 2 in. and thin-wall bending ¾ through 2 in., the company stated.

## 2-Temp Control Designed for Commercial Fixtures




● A new two-temperature control designed especially for use on commercial fixtures such as walk-in coolers, display cases, and florist boxes has been introduced by Ranco Inc., Dept. AH&RN, 601 West Fifth Ave., Columbus 1, Ohio.

This 019 control "effects frequent cycling of the refrigeration system to maintain uniform air temperature and high relative humidity," Ranco said. "It starts the compressor when the evaporator is defrosted after each running cycle and stops the compressor when the fixture air temperature is reached. Each action is independent at a predetermined setting.

"Duration of refrigeration from 'cut in' to 'cut out' settings is variable for each running cycle according to internal load and weather conditions."

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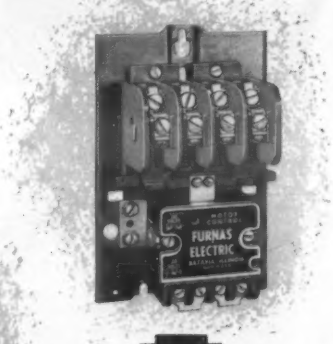


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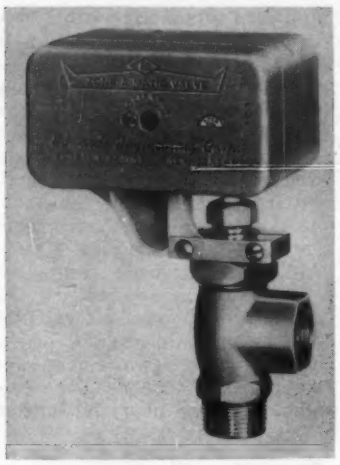


## Motorized Zone-Control Valve Introduced

● A new motorized zone-control valve for new construction and modernization has been announced by Edwards Engineering Corp., Dept. AH&RN, 101-C Alexander Ave., Pompton Plains, N. J.

Called the Edwards "Compact Zone-A-Matic" valve, it enables the builder or contractor to provide fully zoned heat from a single circulator on the heating unit, according to the company.

Among features of the valve, the company said, is a strong electric motor with sealed, lubricated gear train (slow operation of the gear train eliminates the possibility of water hammer on closing), sealed mercury switches, dimensions permitting valve location within baseboard radiation, and positive shut-off.

The valve is available in ¾, 1, and 1¼-in. female threaded pipe sizes, either angle or straight-through patterns; ½ and ¾-in. female sweat, straight-through patterns are also available.

## Flexible Fountain Has Compact Cooling Unit

● A single unit—a new, all-purpose fountain—gives all the advantages offered by three types of drinking water facilities normally used for a variety of requirements, according to Sunroc, Div. SR, Dept. AH&RN, Glen Riddle, Pa.

This semi-recessed model SR-WF is described as "an extremely flexible fountain that combines the convenience of a water cooler, the beauty and endurance of stainless steel, and the economy of china fountains. It supplies uncooled water, or drinking water properly cooled by its self-contained cooling unit, and can easily be refrigerated any time after installation.

"An unusually compact cooling unit," the company said, "is used in the Sunroc fountain — the model TT-5 which is inserted inside the fountain itself, and connected to plumbing already required for unrefrigerated drinking water. The cooling unit is only 14 in. wide by 10 in. high by 6⅞ in. deep—yet has 5 gph capacity."

Model SR-WF measures 18¼ in. from top of back to basin, and is 17¼ in. wide.

## Oil Burner Filters Bow

● A complete line of filters for oil burners has been announced by Lee Filter Corp., Dept. AH&RN, Edison, N. J.

Designed to remove sediment and dirt and to neutralize acids, these filters are said to be an answer to most service problems caused by clogged jets.

## Cooling Tower Can Be Moved In Light Lorry

● The production of a complete packaged cooling tower small enough to be transported in a light lorry has been designed by Film Cooling Towers (1925) Ltd., Dept. AH&RN, Chancery House, Parkshot, Richmond, Surrey, England.

It has a basin, shell, and splash tray made of resin bonded glass fibre, a construction which while contributing to the lightness of the unit, eliminates the necessity of protective painting, the company said.

"The tower operates on the induced draught principle; the fan and motor being mounted on the canopy, expel the air from the top at high velocity," it was pointed out. "The cooling air entering at the foot at a relatively slow speed is circulated evenly over the base area and throughout the interior of the tower.

"The packing is of the Film Flow design. It is composed of a number of horizontal trays of parallel laths, each layer being at right angles to the trays immediately above and below it. The water is discharged from spreader troughs which run along the entire length of the tower and it flows down the grid packing changing direction through 90° in every 2 in. down the whole depth of the tower. A continuously changing film of water meets the ascending air without obstructing its course and as no drops are formed, the loss of water by entrainment is negligible."

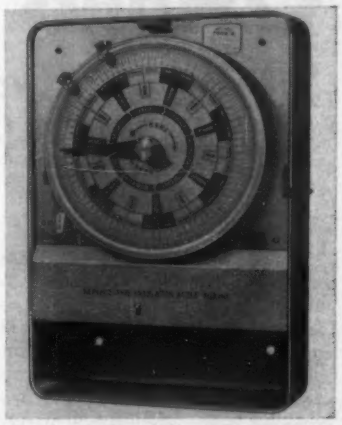
**More details on the products described on these pages may be obtained by writing the manufacturer at the address given in each story.**

## Time Switch Offers 4-Pole Switching Options

● The recent addition of several 4-pole switching options in its 7-day and 24-hour time switch lines has been announced by Paragon Electric Co., Dept. AH&RN, Two Rivers, Wis.

The new options offer UL-approved 4-pole switching arrangements for 3-phase lighting applications. In addition, they offer automatic and simultaneous control of four separate circuits and adaptability for all switching combinations. The switching options were designed especially for heating, ventilating, lighting, and air conditioning in public buildings, stores, and factories.

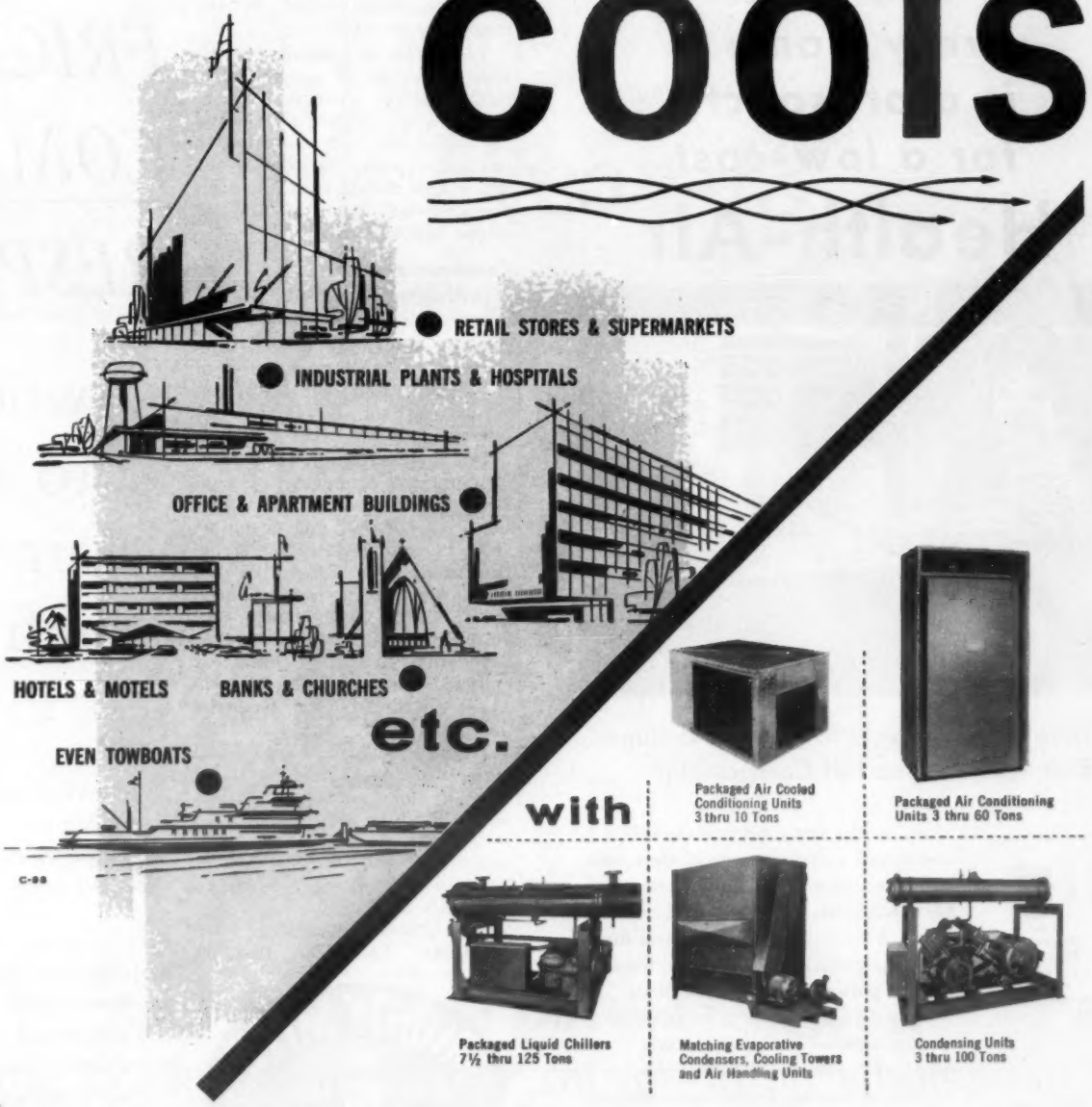
Four-pole switching accomplishes the same results in both the 24-hour and 7-day time switches. Both can be wired 4-pole single-throw—with four normally open, isolated contacts—for 3-phase lighting applications or 4-circuit control. Wired in this manner, each pole has a 20-amp tungsten load rating.



Both time switches can also be wired 4-pole—with two normally open and two normally closed contacts—to fit all switching combinations. Here, poles rather than contacts are isolated. Each pole carries a 40-amp non-inductive load rating. And the switch incorporates a single-pole rating of one horsepower.

Curtis

# COOLS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# Owners Report - -

## *Supermarkets Evaluate Refrigeration, Air Conditioning*

ONE OF A SERIES presenting the experience and evaluation of users of air conditioning and refrigeration equipment.

*By Phil B. Redeker*

LOS ANGELES—As a man with a lot of years in the installation and servicing of refrigeration systems, and as a man charged with the responsibility of keeping in good operation equipment which is preserving many thousands of dollars of merchandise, H. E. "Curley" Grindstaff's methods and opinions command considerable respect in industry circles hereabouts.

He is in charge of installation and service of refrigeration equipment for the Thriftimart, Inc. chain of food supermarkets, and he carries out these operations with his own crews of men. He has some rather definite ideas about good and bad methods of both installation and service, and some of the methods he uses are of his own origination.

For example, in a multiple compressor installation for a food market, where the conditions permit, he likes to use a closed-circuit evaporative condenser system, and to assemble the compressors on racks in the shop before taking them to the job.

### 'Ideal' Installation

The ideal installation, as Grindstaff likes to develop it, consists of banks of four compressors on a two-tier rack (two above, two below). The compressors are put on the rack in the shop by means of a fork-lift truck.

At the job site the tubing lines to the compressor will have been run (preferably underground, in trenches) and connections can be quickly completed. Compressor racks are installed 18 in. from the wall, and thus all servicing can be done from the floor.

The closed-circuit evaporative condenser system, says Grindstaff, provides "near perfect" control of head pressure and minimizes the oil return problem. He states further that it cuts the maintenance on the condenser about 70%.

To prevent any damage to the system because of any malfunctioning of the evaporative condenser, a special flow switch and an alarm bell are connected to the water pump, so that if the water flow should stop, the compressors will cut out and an alarm bell will ring.

### Compressors Are Individually Valved

The compressors are all individually valved off so that any compressor can be taken out of the circuit and serviced separately without disturbing the operation of the other units.

In the installation of a 3-fan evaporative condenser, Grindstaff prefers to make the installation so that air can be pulled in at the roof level of the structure in which it is installed, and discharged at the ceiling level.

"It is in the matter of "cleanliness" of the system that Grindstaff has put the most emphasis in preventive maintenance on the systems which he has installed. And he has achieved considerable local recognition for the unusual "rig" he has developed to "wash out" the system on the job.

"About 85% of expansion valve troubles are directly related to the presence of foreign materials in a refrigeration system," Grindstaff relates. "My experience has been that in most instances the dirt and moisture and other foreign material gets into the system before it is put into operation.

"You can't clean a system in the shop and expect it to remain clean while you're going through all the things you must do in making a field installation," he says. "So, what you have to do is to work out the best way to get the system clean before it's ready to start up."

### Designs and Builds Portable 'System Washer'

To accomplish this, Grindstaff designed and had built the "rig" which is a portable "system washer" and this is what his men use to assure cleanliness in a system before it is started up.

Basically, the "system washer" is a cylindrically shaped container in which Refrigerant-12 or Refrigerant-22 is used, and then this refrigerant is used to wash out the system, with the foreign material that is flushed out of the system being dropped as residue in the bottom of the container.

The construction of the cleaner "rig" is not too complicated. Centered under the connection where the refrigerant enters are three Sporlan "Catch-All" drier-strainers. Built into the sump in the bottom of the container is a bleed-off valve or drain. Built into one side of the container are two refrigerant sight glasses, one near the top, and the other near the bottom of the container.

### Operating Cleaner

The "system cleaner" is set up and operated in the following manner:

All expansion valves in the system are removed and replaced with "jumpers." An adapter flange is inserted between the suction service valve

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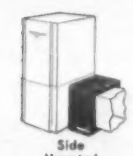


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WHEN FRICK designs, manufactures and installs an air conditioning or refrigeration system of *any* size . . . *it works.* We guarantee that by written contract; no excuses, no alibis, no putting the blame on any component manufacturer.

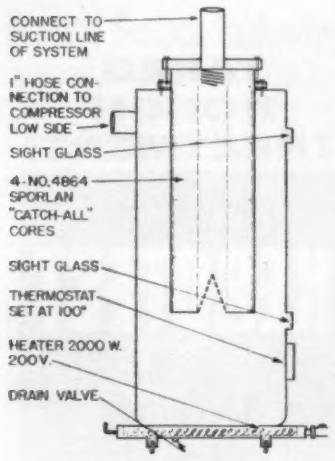
Because of our complete and unique engineering service, the pride we take in our work and our 107 years of experience, we have . . . with the cooperation of architects, consultants, and contractors . . . designed, installed and *guaranteed* air conditioning and refrigeration systems of all types . . . for hotels, restaurants, stores, office buildings, hospitals, processing and industrial plants.

Write for estimates. Better yet, a FRICK engineer will be happy to discuss your problem with you. No obligation.

FRICK COMPANY
Waynesboro, Pennsylvania

FRICK

18 BRANCH OFFICES AND MORE THAN 150 DISTRIBUTORS THROUGHOUT THE WORLD


CONNECT TO SUCTION LINE OF SYSTEM
1" HOSE CONNECTION TO COMPRESSOR LOW SIDE
SIGHT GLASS
4-NO.4864 SPORLAN "CATCH-ALL" CORES
SIGHT GLASS
THERMOSTAT SET AT 100°
HEATER 2000 W. 200 V.
DRAIN VALVE

PORTABLE SYSTEM CLEANER design as used by H. E. Grindstaff, in charge of refrigeration operations for the "Thriftimart" chain on the West Coast, is shown in this drawing. Refrigerant-12 or 22 is used to wash out the system, and as the cleaner passes through the drier-strainer cores and then flows into the sump, where a heater vaporizes the gas and any remaining foreign material will drop into the sump.

and the body of the compressor. A 1-in. flexible refrigerant hose connection is made between the adapter flange and the cleaner container.

Following an evacuation cycle, the system is literally "flushed out" with the liquid refrigerant. Then through a connection to the top of the cleaner container the refrigerant is brought into the cleaner.

In the cleaning cycle the refrigerant passes through four Sporlan "Catch-All" drier-strainer cores, and then flows into the sump. These drier-cleaner cores are replaced for every cleaning operation.

In the sump a 2,000-watt 220-v. electric heater, holding a temperature controlled at 100° F, vaporizes the refrigerant into a gas and any foreign material that hasn't been caught in the drier-strainer will probably drop out at this point. The heater keeps the refrigerant boiling and the vaporized refrigerant is then drawn back into the compressor.

Following the cleaning operation, the system is charged with the refrigerant that was used in the cleaning process, and the expansion valves are installed while the system is under slight positive pressure.

### 'Preferred Practices'

Grindstaff has some other thoughts about preferred practices in installing systems. It is good practice, as he sees it, to insulate suction line returns to the compressor because it is important that the refrigerant returning to hermetic units particularly be at the correct temperature for proper cooling of a compressor body.

There is not too much fault to find with present-day equipment and components being furnished by the manufacturers, Grindstaff says. He thinks that there is room for improvement in terms of reliability and length of life of some components.

Defrosting systems have long been a major problem with low temperature equipment, and most present-day systems have cut defrosting time to satisfactory levels.

However, a problem that still exists, as Grindstaff sees it, is fast-enough draining of the condensate from evaporators and fixtures.

"We can get the frost off fast enough most of the time," he says, "but getting rid of the condensate before it will start to freeze up again is a problem."

## Roanoke Distributor Named by Savage

TRENTON, N. Y. — A. K. Thornley, director of sales of the Savage Ice Cream Cabinet Div. of C. V. Hill & Co., Inc., announced the appointment of the Ted Burton Co., Roanoke, Va., as distributor for the Savage line of chest and merchandising cabinets.

The Ted Burton office in Roanoke will serve as a warehousing and distribution center for a selling territory which will include the western half of Virginia and six bordering counties in West Virginia.

## La Crosse Names Manufacturer's Rep

LA CROSSE, Wis.—The La Crosse Cooler Co. has announced the appointment of William W. Crumpton of Atlanta as manufacturer's representative for the northeastern portion of the United States.

Crumpton will be traveling through the New England area as well as New York, New Jersey, and the northern portion of Pennsylvania. He has an extensive background in the bottling and vending fields.

## Slide Film Discusses Bohn's Defrost System

DANVILLE, Ill.—A commercial refrigeration program (colored slides) showing the facilities, products, and services offered by the Danville Div. of Bohn Aluminum & Brass Corp. is now available through Bohn sales representatives.

The company said the program is available for presentation to service groups and wholesaler organizations as well as to others interested in methods and equipment for commercial refrigeration. The slide program includes a detailed discussion of Bohn's "Vapor-Hermetic" low temperature automatic defrost system.

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FOR ALL MAKES OF ICE MACHINES

VAPCO
ICE MACHINE CLEANER

The ORIGINAL LIQUID Ice Machine Cleaner. Works fast yet safely. Produces FRESH SMELLING flakes and cubes.

No danger from toxic residues because it's FOOD GRADE. Simple and safe to use with ANY machine.

1. Goes into solution quickly — even in COLD water.
2. No undissolved crystals left.
3. Removes more scale per ounce of cleaner.

Now, in Safe, Mailable 8 oz. Plastic Bottles and 200 lb. Drums.

Complete literature on request or see your dealer TODAY!

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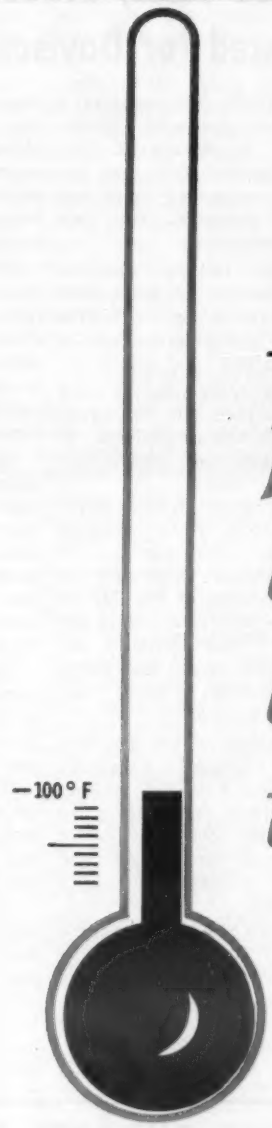


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*low*
*low*
*temperatures*

Another premium Du Pont refrigerant now available from your refrigeration wholesaler

Ultralow-temperature refrigeration —this is the ever-increasing role being performed by Du Pont Freon-13*. And now Du Pont has met industry's growing need for this refrigerant by making it commercially available from your refrigeration wholesaler.

Use of "Freon-13" with "Freon-12" or "Freon-22" in two-stage cascade systems has made practical the attainment of ultralow-temperature conditions of −100°F. and lower.

Cascade systems with "Freon-13" are already operating successfully for such applications as metal treating, shrink-fitting of parts, oxygen manufacturing, environmental testing and low-temperature storage and preservation.

In common with all "Freon" refrigerants, "Freon-13" has excellent thermal and chemical stability—is nonflammable, virtually nontoxic and unsurpassed in purity and dryness. Ask your local, dependable refrigeration wholesaler for it.

For more information write: E. I. du Pont de Nemours & Co. (Inc.), "Freon" Products Division, N2420, Wilmington 98, Delaware.

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refrigerants

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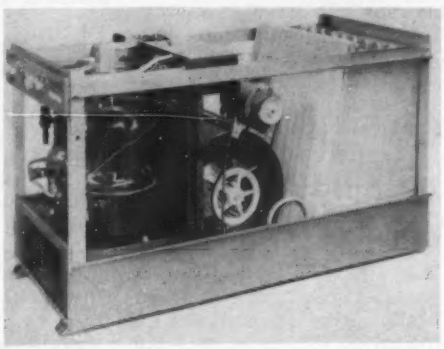
**Freon- and F- followed by numerals are Du Pont's registered trademarks for its fluorocarbon refrigerants.*

Better Things for Better Living . . . through Chemistry

## *Rheemaire RA-110 Features Twin Compressors*



TWIN HERMETIC COMPRESSORS of the new Rheemaire RA-110 condensing unit, being shipped for the 1961 air conditioning season, are visible in this view with panels of the cabinet removed. This dual-circuited unit announced by Rheem Mfg. Co. has been introduced for use in air conditioning two areas—each with its own air handler—or for two-stage cooling. A time delay relay prevents both compressors from starting at once. As in all Rheemaire equipment, the RA-110 has the exclusive "air film" condenser, introduced by Rheem five years ago. Combination of "air film" condenser with dual compressors permits operation on single-phase service, it is pointed out.

### *Maytag Drops Refrigeration Lines*

NEWTON, Iowa—Maytag Co. will no longer market refrigeration equipment, it was reported recently. The company, for several years, has sold refrigerator-freezers and freezers made by Amana Refrigeration, Inc. No reason was given for the company's decision to leave the refrigeration field.

# Acme Industries' Annual Sales Meeting Goes 'on the Road'; To Play 4 Regions

JACKSON, Mich.—Acme Industries' annual sales meeting went "on the road" this year with four regional meetings being held in Cleveland, New York, Chicago, and Denver, according to P. A. Weatherwax, executive vice president.

Scheduled for late November and early December, each of the meetings is a day-long session.

These meetings are under the immediate direction of the respective regional managers: Peter Butterfield, Cleveland; R. Jay Harris, New York City; William J. Morris, Chicago; James F. Calvin and Harold J. Rust, Denver.

The headquarters staff assistant in these presentations includes P. A. Weatherwax; D. G. Merrill, field sales manager; and R. L. Bishop, national service manager.

The meetings, with more than 100 Acme sales representatives participating, stress the installation, service, and proper maintenance of Acme equipment.

In addition, the total objectives of national sales and how they are related to the field sales force, is outlined by Frank M. Russell, new national accounts sales manager.

*After Year of Experience*

# Expanded Sales, Production Program Announced for Davison's Microtraps

BALTIMORE, Md. — After a year of experience with "Microtraps," W. R. Grace & Co., Davison Chemical Div., has announced an expanded sales and production program for this family of products.

Microtraps is the Davison name for zeolite crystals with unique qualities of selective adsorption and dehydration, it was pointed out.

Large quantity orders can now be accepted for the products, which are priced at 80 cents to $1.30 per pound, according to quantity.

Davison's work in the introductory period, while ranging widely, has been particularly directed toward tailoring the physical qualities of the Microtraps to the precise needs of the application," the division explained. "Both shape and particle size distribution have been accordingly varied.

"Applications which Davison has found especially favorable for development include refrigeration drying, separation of hydrocarbons, dehydration of various gases, and as catalyst carriers for controlled release of active agents.

"Microtraps are manufactured by Davison processes, but the company has been licensed to employ also the processes patented by the Linde Co., division of Union Carbide Corp.

"Davison Microtraps—powder form—are a family of crystalline alumino-silicates with a structure characterized by a repeating three dimensional network of large, open 'cages' interconnected by smaller uniform pores.

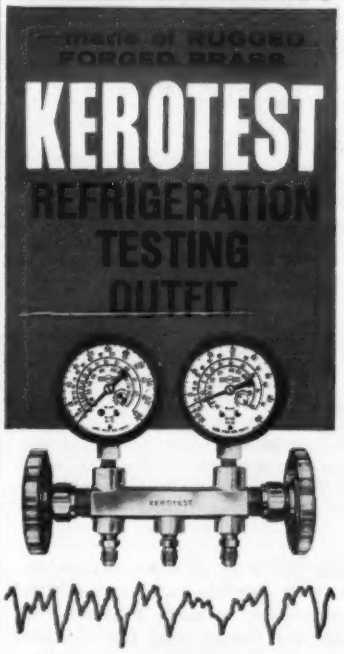
"This uniform crystalline structure imparts to the Microtraps properties which make them excellent desiccants, with capacities much less sensitive to relative humidity and elevated temperatures than most common adsorbents.

"In addition, they possess the unique ability to adsorb small organic molecules within the 'cages' while excluding larger molecules which cannot pass through the pores. Thus they can effect sharp selective separation of organic molecules from complex mixtures.

"Microtraps also differentiate between molecules on the basis of polarity or degree of saturation, the most highly polar or unsaturated molecules being preferentially adsorbed. Microtraps retain certain compounds under moderate temperatures and can be regenerated at elevated temperatures.

"They are stable at temperatures up to 1,000°F and are inert in a wide range of organic compounds. They are not harmed by contact with liquid water. Because of their slightly basic nature they are subject to attack by strong acids."


TAKES ROUGH TREATMENT!




- ✓ All connections in accordance with ARI specifications.
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- ✓ Clearview, accurate gauges.

The Kerotest Refrigeration Testing Outfit is used for a variety of services including:

Purging air or gas from high side of system—charging oil in low side—testing low side controls—charging liquid gas in high side—charging gas into low side—setting expansion valves—purging gas from gauge lines.

Kerotest Refrigeration Testing Outfits withstand severe service day after day. Sturdy forged brass construction in single or double units. Write for full information or send for catalog.

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Activated charcoal acts as a positive molecular sponge which adsorbs gases, vapors, irritants, toxic substances and smog. It enables you to engineer for high percentage air recirculation at low cost.

These and many other bulletins on all applications of activated charcoal are available to you. Give us the details of your application and we will supply specific data and samples.

We supply a complete line of activated carbons for every purpose; design and prefabricate air and liquid purification, separation and recovery systems. Barnebey-Cheney, Columbus 19, Ohio.

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FREE PARKING AND FAST COUNTER SERVICE AT THESE 4 BIG WAREHOUSES

# RACCA Seeks Industry-Wide Cooperation -

*(Continued from Page 7, Col. 5)*
significant statements made in these messages (some of which will be detailed later):

### NAPC President . . .

**Carl N. Finley, president, National Association of Plumbing Contractors:**

"I have been particularly impressed by your 1960 convention theme—'Your Business In the 60's.' I'm just selfish enough that I want to make a substantial profit in the next 10 years on the investments in my business. I want to serve the public in an ethical fashion! I want to be a credit to my family and my association! But I still want to make a decent profit! Let's face the fact—that's why we are in business.

"Going into this question of profits a bit further, many of you are no doubt aware that NAPC has published a booklet called 'Economy & Efficiency with Separate Mechanical Contracts.' It was aimed at reducing the vicious bid-shopping and bid-peddling problems which we contractors must face when trying to deal with an owner through middlemen.

"Our studies, conducted over an 18-month period, show that where separation of mechanical contracts is practiced, the profits to the mechanical contractor are greater, the headaches fewer, and prices to the ultimate consumer are lower. What greater benefit can everyone involved receive? Increased efficiency of construction, greater profit for the contractor, and better service to the owner!

#### 'LETTERS FAVOR NAPC APPROACH 25 TO 1'

"We have a stack of letters from architects, owners, engineers, contractors, and governmental officials concerning our brochure. The responses—including dozens of unsolicited endorsements from top-ranking architects and other officials—have run better than 25 to 1 in favor of our approach. Just to cite one example among many, AT&T—the parent corporation for most of the telephone and telegraph companies throughout the country—requested 200 copies of the brochure for distribution to the chief engineer in each of their affiliates. AT&A is now substantially a 'separate contracts' corporation.

"The bid-shoppers, the bid-peddlers, and the gouging middlemen are, naturally, leaving no stone unturned in an effort to cast aspersions on the principles of separation of contracts. Somehow, I can't believe that they will succeed, for too many within their own ranks are acknowledging the truth of our contentions. One of our staff men recently was approached by a large Chicago general contractor on the subject of separate mechanical contracts. Almost the first thing the general contractor said was,

" 'I don't care what any organization, association, or architect says. I know from experience that my customers are served better, I have fewer headaches, and both the mechanic and I have bigger profits when he handles the mechanical work separately. And, we have no difficulty coordinating the jobs, either!' "

### UA General President . . .

**Peter T. Schoemann, General President, United Association (union), speaking on "Problems, Possibilities, and Opportunities In the Sixties."**

"Our problems are twofold. First, we must maintain standards among the contractors in our industry—standards of competence and ability. As a matter of mutual self-interest we must take every reasonable step to wipe out competition from the unqualified air conditioning and refrigeration man. This man is a luxury which neither of us can afford, a luxury which the consuming public cannot afford.

"Second, the United Association has the continuing long-range problem of furnishing you with craftsmen whose skills will keep pace with the demands of our industry.

1960-1961 OFFICERS AND DIRECTORS of RACCA National are, front row l. to r.: Harvey W. Hottel, Washington, D. C., treasurer; Don L. Kissell, Los Angeles, first vice president; Walter McCarty, Chicago, president; T. C. Alexander, Denver, immediate past president; Robert S. Lafferty, Miami, recording secretary; J. A. Marchase, Pittsburgh, sergeant-at-arms. Back row l. to r.: Directors, Ingvar Monsen, New Jersey; Herschel O. May, San Francisco; Warren Farr, Cleveland; William D. Moody, Houston; Arthur M. Palen, St. Louis; and Harvey O. Miller, Chicago. Brooks Reeder of Detroit, second vice president, was not present for the picture.

#### TRAINING PROBLEM

"On the training problem, in every area where you and the UA have negotiated new refrigeration agreements, we have also established a joint training program. We have established these programs for both apprentices and journeymen. We have agreed that these programs must be supervised by a joint committee of contractor and union representatives, and also that these training programs must be financed by a payroll contribution to a joint training funds administered by the joint training committee.

#### UNQUALIFIED CONTRACTORS

"The second urgent problem confronting us both is the problem of the unqualified contractor. Many believe that the incompetent contractor will, as a problem, eventually take care of itself. But, by the time the supplier and the public catches on to him, the damage has been done. The unqualified contractor has made a shambles of your business and taken the work away from competent mechanics of the very kind we now seek to organize and train for our mutual benefits.

"What I want to suggest as a solution is a simple but fair and effective public licensing and bonding system for contractors established by law or ordinance in every state or community. I am not suggesting a licensing system for mechanics. Our joint training program will eventually operate to solve the problem of the unqualified journeyman.

"I am thinking of a licensing statute or ordinance which, at least in the beginning, would not establish any firm or difficult hurdles or barriers which a contractor must surmount before he gets his license to install refrigeration and air conditioning equipment. Getting a license should perhaps be made relatively easy. Once a man is licensed, however, he must be made to toe the mark, and the law should require an adequate bond, and provide for a board to whom complaints could be made and which would have the power to revoke licenses."

### ARI Retiring President . . .

**Rudy Berg, retiring president, Air-Conditioning & Refrigeration Institute:**

"At ARI we have strengthened our inter-association relations committee with a view to encouraging this activity in all of its legal aspects. We have named a special committee with the particular aim of working out problems of mutual interest between ARI and RACCA, and your association has named a similar committee.

"ARI's activities in industry promotion, industry standards, and in many other fields all are aimed at a stronger industry 'across the board.' We believe that activities of your organization and other allied groups have a similar goal. The ARI-sponsored program for the certification of unitary air conditioners has been aimed at this goal.

"Manufacturers of more than 90% of all unitary equipment made in the U.S. are participating in this program. Won't it be an excellent example of industry cooperation at work when this same—or a larger—percentage of the other segments of the industry use the program for their own benefit and the total benefit of the industry and the public?"

Continued growth of RACCA national was reported in the new affiliation of four local or state RACCA associations. The locals were Memphis, Tenn. and Fresno and Sacramento, Calif. The state group affiliating was Utah.

Special tribute was paid to Guido Restagno, Resco Refrigeration Service, Inc., for his work in editing the 104-page 1960 RACCA Yearbook and Convention Program, which describes some of the functions, accomplishments, and aims of RACCA national.

Slate of new RACCA national officers for the coming year is headed by Walter McCarty, McCarty Bros. Equipment Corp., River Forest, Ill., as president; Don L. Kissell, Kissell Refrigeration Corp., Los Angeles, first vice president; Brooks C. Reeder, York Detroit Contractors, Detroit, second vice president; Robert S. Lafferty, Hill-York Corp., Miami, recording secretary; Harvey W. Hottel, Harvey W. Hottel, Inc., Silver Spring, Md., treasurer; Joseph A. Marchase, Marchase Refrigeration Co., Pittsburgh, treasurer.

Other directors elected include: Warren W. Farr, Refrigeration Sales Corp., Cleveland; Harvey O. Miller, Murphy & Miller, Chicago; William D. Moody, Barber, Inc., Houston; A. M. Palen, Palen Refrigeration, St. Paul; Herschel O. May, Industrial Installations, Inc., Berkeley, Calif.; I. Monsen, Monsen Refrigeration Service, Bloomfield, N. J.; and as immediate past president, T. C. Alexander, T. C. Alexander Co., Denver.

*They said it couldn't be done... but Calgon® did it*

*—made a powdered acid that is Economical – Safe – Effective*

Yes, where economy is the prime consideration when you are cleaning scale from a cooling water system, don't accept *one* without the other *two*. Calgon Condenser Cleaner has *all three*—it's *safe*, it's *economical* and it's *effective!*

Calgon Condenser Cleaner is one of the Quality Calgon Products available from your Refrigeration Wholesaler. Ask about all of them.

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Complete authority — 10% override — protected territory.

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The completely silent Air Cooled Condenser
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WATER COOLED **COAXIAL CONDENSERS**
*Domestic and sea water models*
Reduce costs 40% . . . Reduce condenser water 35% . . . Reduce refrigerant charge . . . Stabilize capillary performance . . . Compact shapes.
WRITE FOR BULLETIN TT-953

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For chilled water cooling systems and for heating systems . . . 100% positive shut-off . . . Compact . . . Low cost . . . Low Voltage . . . No current draw when open.
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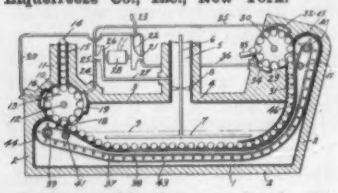
*TEmple 5-2808*

One of the nation's largest manufacturers of Residential and Commercial Boilers; Baseboard and Steel-Fin Radiation, Motorized Valves, Air and Water-Cooled Refrigerant Condensers

# PATENTS

## Week of Sept. 6 (Concluded)

**2,951,353. APPARATUS FOR REFRIGERATING SUCH PERISHABLE MATERIALS AS FOODSTUFFS. Willard L. Morrison, Lake Forest, Ill., assignor, by mesne assignments, to Liquefreeze Co., Inc., New York.**



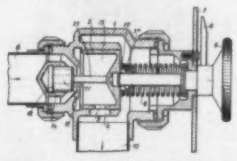
1. In combination, a closed gas chamber having spaced inlet and discharge ports for entrance of solid material to be treated in the chamber, a gas lock closing each port, including a rotary gas lock cylinder adapted to prevent gas travel through the port and having pockets movable toward and from the chamber and adapted to receive and convey solids through the port, suction means in the path of and adapted to register with the pockets of each gas lock cylinder as they travel toward registry with the chamber. . . .

**2,951,449. CENTRIFUGAL PUMP. James P. Van Blarcom, Jr., Ridgewood, and Joseph L. Gatto, Wyckoff, N. J., assignors to Bell & Gossett Co., a corporation of Illinois.**

1. A centrifugal pump comprising a casing having a discharge outlet and a suction passage terminating at a suction inlet with said suction passage and said suction inlet cooperating in defining a liquid drain level; internal surface portions carried by said casing to form an impeller chamber that communicates with the suction passage, a flow conversion chamber around the periphery of the impeller chamber, and a plenum chamber occupying the remainder of said casing and communicating with the discharge outlet; and a centrifugal impeller rotatable in a given direction in said impeller chamber and having a suction eye around its axis with the eye facing said suction passage. . . .

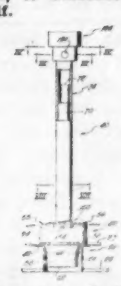
**2,951,501. REGULATING DEVICE FOR A FLOW MEDIUM. Henric Wilhelm Thylefors, Stockholm, Sweden, assignor to Aktiebolaget Separator, Stockholm, Sweden.**

1. A flow regulating device comprising a housing having an inlet and an outlet for the flow medium to be regulated, a throttle member in the form of a hollow piston disposed in the path of the flow medium between



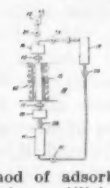
said inlet and outlet and movable relative to the housing, the housing having an opening and the throttle member having a lateral opening forming with said first opening a first throttle point leading towards said outlet and variable as to throughflow area by rotary movement of the throttle member relative to the housing. . . .

**2,951,504. OVERRUN CONTROL VALVE FOR ICE CREAM DISPENSERS. James Cullin McBroom, Sherman Oaks, Calif., assignor, by mesne assignments, to Florence Patty, Bellflower, Calif.**



1. A valve for admitting into a freezing chamber a quantity of liquid mix from a reservoir and a generally proportionate quantity of air comprising: a housing collar having an outer downwardly facing annular shoulder adapted to sealingly contact the edge of a circular opening of a chamber upper wall and an upwardly projecting guide sleeve concentric with said shoulder. . . .

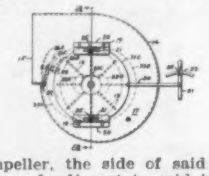
**2,951,552. GAS SEPARATOR. Peter Cannon, Scotia, N. Y., assignor to General Electric Co., a corporation of New York.**



8. A method of adsorbing Freon-22 which comprises, utilizing a crystalline zeolite molecular sieve, adsorbing Freon-12 on said sieve, exposing the said sieve with the adsorbed Freon-12 thereon to Freon-22 for the adsorption thereof in an amount greater in quantity than would be adsorbed by a crystalline zeolite molecular sieve not having adsorbed Freon-12 thereon. . . .

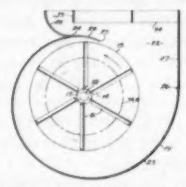
**2,951,630. CENTRIFUGAL FANS. James D. Murphy, Framingham, Mass., assignor to Westinghouse Electric Corp., East Pittsburgh, Pa.**

1. A centrifugal fan comprising an impeller having a non-shrouded inlet side, a scroll-shaped casing around said impeller, said casing having a cut-off adjacent to the perimeter of



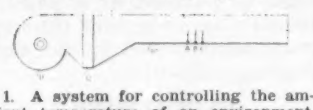
said impeller, the side of said casing opposite and adjacent to said impeller inlet side having an opening therein, a conduit having an inlet passage concentric with said impeller at one position of said conduit. . . .

**2,951,632. AIR BLOWER. Harry I. Hanson, Minerva, Ohio, assignor to Good Roads Machinery Corp., Minerva, Ohio.**



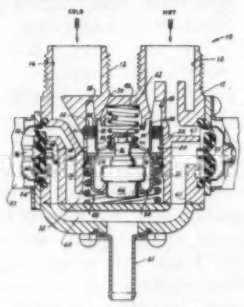
A blower comprising a power-driven, centrifugal-impeller-type rotor; a rotor housing around the rotor continuing into a walled outlet passageway comprising; opposing spaced apart side walls; a series of side by side, elongated, pointed teeth formed from sheet metal, projecting from one side wall and being in a common geometric plane transverse of and part way across the passageway, the middle teeth of the series being longer than those at the ends, and the points of the teeth being in a rectilinear geometric line substantially parallel to the rotor axis. . . .

**2,951,640. TEMPERATURE CONTROLLING APPARATUS. David L. Buchanan, Whitemarsh, Pa., assignor to The Budd Co., Philadelphia.**



1. A system for controlling the ambient temperature of an environment, which system includes a first, a last, and at least one intermediate subsystem in an ordered sequence, each subsystem comprising a heat change producing unit exchanging heat energy with said environment when actuated, a thermally responsive actuator means actuating said unit in response to a variation of said ambient temperature past a respective ambient response temperature of said actuator means. . . .

**2,951,641. NOISELESS MIXING VALVE. Julius William Kovach and Sampson T. Noall, Jr., Detroit, and Thaddeus J. Cialek, Madison Heights, Mich., assignors to American Radiator & Standard Sanitary Corp., New York.**

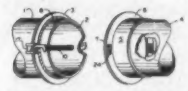



A mixing valve comprising a valve housing internally contoured to define an annular hot fluid inlet chamber, an annular cold fluid inlet chamber in axial alignment with said hot fluid chamber, and a mixing chamber extending from within the central space defined by the inlet chambers to a point adjacent the cold fluid chamber and remote from the hot fluid chamber; an outlet opening for said mixing chamber located adjacent the end thereof remote from the hot fluid inlet chamber. . . .

**2,951,675. VALVE CONSTRUCTION. Stanley F. Jackes, University City, and Joseph N. Miller, Overland, Mo., assignors to Jackes-Evans Mfg. Co., St. Louis, Mo.**

3. A valve construction comprising a valve body having a bore formed in one end and guide slots extending through the body wall adjacent to the one end, a rotary plug positioned in the valve body through the one end thereof having a keyway open toward the one end of the body and diametrally aligned with the guide slots. . . .

**2,951,717. AIR DUCT COUPLING. Adolph J. Zaber, Moline, Ill., assignor to American Air Filter Co., Inc., Louisville, Ky.**



1. A coupling arrangement for air ducts of the type used with portable forced air heaters, comprising: a male duct end carrying a first peripheral flange spaced from the rim of said male duct end; a female duct end adapted to telescopically receive said male duct end, said female duct end carrying a second peripheral flange at its extremity; compressible gasket means disposed between the opposing faces of said first and second flanges; guideway means providing axially extending tracks at diametrically opposite external locations on said male duct end; latch means including a transversely slotted body portion slidably carried for movement in an axial direction only in each of said guideway means. . . .

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CHICAGO'S ONLY DOWNTOWN MOTEL — RIGHT ON MICHIGAN AVENUE ACROSS FROM GRANT PARK. Closest to all convention centers — museums — theatres and shopping. Register from your car. Every room excitingly furnished — tile bath with tub and shower, free TV, AM & FM, Hi-Fi radio, room controlled heating and air-conditioning. Self dialing phones — 24 hour switchboard and message service. Free ice cubes. Room service. Atmospheric restaurant and lounge. Sun deck. Private dining rooms. Free swimming privileges at Acres Cabana Club. Phone HA 7-8200 Teletype CG-82
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# CLASSIFIED ADVERTISING

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### POSITIONS WANTED

AVAILABLE — SEVERAL years experience in air conditioning, heating, refrigeration, and allied fields including system design, application engineering, sales engineering and sales management. Also have knowledge of field engineering. BSME degree. Will relocate. BOX A6675, Air Conditioning, Heating & Refrigeration News.

### POSITIONS AVAILABLE

EXCELLENT OPPORTUNITY for graduate engineer with experience in design and installation of air conditioning, from 5 to 150 tons. Must have or be able to qualify for Massachusetts Registered Professional Engineering License. Please submit complete resume with letter of application to DEE AIR CONDITIONING, INC., 65 Main Street, Springfield, Massachusetts.

STATISTICAL QUALITY control engineer — require previous experience heat transfer field—engineering background in refrigeration essential — fully familiar with statistical quality control procedures/programs, inspection and test data analysis, quality audit. Send resume: Personnel Director, FEDDERS CORPORATION, Maspeth 78, New York.

SELL PRICING service. Full time position for salesman familiar with pricing procedures of contractors and wholesalers. If you like heavy travel and are a strong salesman the position offers monthly salary plus commission. Submit complete resume in first letter. Replies confidential. R.A.C. PRICE REPORTER CO., 1809 Manhattan Beach Boulevard, Manhattan Beach, Calif.

MANUFACTURERS' REPRESENTATIVES—wanted for many open territories—Replacement parts to refrigeration wholesalers and OEM—write giving all details—lines presently handling—territory—size of organization. SEALED UNIT PARTS COMPANY, INC., 1178 E. 180th Street, Bronx 60, New York.

MANUFACTURERS' REPRESENTATIVES for residential and small commercial year-round air conditioning. Twenty-five year old company. Factory southern location. Many desirable territories open. Give details — your present territories, lines, references. BOX A6633, Air Conditioning, Heating & Refrigeration News.

HEAT PUMP and air conditioning representative for state of Florida. Principal responsibilities include selling and training distributor personnel, contacting dealers and utility personnel. Must be familiar with application, installation, service and consumer relations as related to complete line of air conditioning and heat pumps for commercial and residential use. Manufacturer is growing and aggressively engaged in heat pump field. Position available on straight commission or salary, expenses and incentive arrangement. Write BOX A6664, Air Conditioning, Heating & Refrigeration News. Include complete resume and photograph.

SERVICE MANAGER for Chicago refrigeration and air conditioning contractor. Must be capable of complete supervision and control of 12 to 15 servicemen, satisfying existing accounts and developing new accounts essential to position. Excellent salary and incentive. All replies confidential. Our personnel know of this ad. BOX A6668, Air Conditioning, Heating & Refrigeration News.

FIELD SERVICE engineer—Our company is growing and expanding. We need and have opportunity for a capable, experienced, refrigeration service man, under 40 years to handle field service engineer responsibilities in limited territories in the Northeast, Midwest and West Coast area. Must be free to travel. Food store experience preferred. Willing to move at our expense, if necessary. High school (or better) education. Give full details, with five references, and send photograph with first letter. Applications without photographs will not be considered. Salary, expenses, insurance, welfare, and other benefits. BOX A6670, Air Conditioning, Heating & Refrigeration News.

PRODUCTION SUPERVISOR—refrigeration: Manufacturer of refrigeration compressors located in Midwest seeks experienced man for supervisory position. If you have had a minimum of 5 years' line supervisory experience in the production of hermetically sealed compressors and systems, we have a position with a future for you in this growing corporation. Salary, commensurate with experience and training. Please send resume, salary data to BOX A6672, Air Conditioning, Heating & Refrigeration News.

MANUFACTURERS' REPRESENTATIVES. Air conditioning and heat pump manufacturer expanding to nationwide distribution desires full particulars and resume with first letter. Many choice territories available immediately. All replies confidential. Reply to BOX A6673, Air Conditioning, Heating & Refrigeration News.

MANUFACTURERS' REPRESENTATIVE for complete line of compressor and condensing units 5 to 75 h.p. Packaged chillers using open type compressors 10-300 h.p. and chiller line with hermetic compressor 7½ to 30 h.p. Sales are direct contractor—with some products through jobbers. Engineering talent required—openings in Washington, D. C., Omaha, Milwaukee, Dallas, Philadelphia, Minneapolis and others. Write fully to BOX A6676, Air Conditioning, Heating & Refrigeration News.

MANUFACTURERS' AGENTS — To handle a complete line of commercial refrigeration, air conditioning and heating coils of a nationally known manufacturer in business over fifty years to be sold to OEM accounts and wholesalers. Excellent commissions. Territories available: 1. Georgia, Alabama, Western Tennessee, Mississippi, Arkansas, and Louisiana. 2. Nebraska and Iowa. 3. Southern Ohio, Indiana and Kentucky. Send resume and lines now carried to BOX A6677, Air Conditioning, Heating & Refrigeration News.

### EQUIPMENT WANTED

WANTED: MANUFACTURERS surplus, outdated or obsolete refrigeration items—expansion & water & shutoff valves, controls, relays, dehydrators, units, tubing, fittings, etc. All sales on a cash closeout basis, large or small quantity. Write or call: COMMERCIAL CONTROLS, 1463 Crotona Place, Bronx 56, New York City. WY 2-5083.

BRUNNER COMPRESSORS—all models, used and repairable. Send description of model numbers and quantity. Also need other makes used compressors and parts. Will pay cash. UNITED REFRIGERATION CORP., 514 W. 12th St., Los Angeles 15, Calif.

### EQUIPMENT FOR SALE

COMPLETE AIR conditioning systems in excellent working order—used. 1—250 ton, 1—100 ton, 1—60 ton, 1—30 ton, 1—25 ton, 1—10 ton, Carriers, Chryslers, etc.—fully equipped with controls. Export inquiries invited. COMMERCIAL CONTROLS, 1463 Crotona Place, Bronx 56, New York City.

NOTICE: DISTRIBUTORS, dealers, servicemen, users refrigeration equipment—repair parts available all models Baker ammonia and Freon compressors. Also models 6B and F6B ammonia compressors. We are exclusive Baker export sales office. Manufacturers' export agents refrigeration, air conditioning, and allied equipment. THE KEISER COMPANY, 1555 W. 79th St., Chicago 20, Illinois.

ATTENTION REFRIGERATION Servicemen. Send for catalog listing values in refrigeration and air conditioning parts, relays, capacitors, compressors. Savings up to 50%. WALTER W. STARR, 2833 Lincoln Ave., Chicago 13, Illinois.

# GOING TO THE SHOW?

## *The 15th International Heating & Air Conditioning Exposition*

**Chicago—February 13th thru 16th, 1961**

### YES

To make the most of your time and investment and still have time to enjoy the sidelights of that Chicago trip, make a note right now to pay particular attention to all NEWS' January issues. These issues will be filled with articles and advertisements describing who, what and where about the show.

Knowing what to see and where to go is the key to making such trips pay off. Before you leave for the Exposition make sure you take your big February 13th Show Issue of the NEWS. If you have to leave before it arrives, stop by the NEWS' booth (No. 342) and pick up one of the extra copies we will have on hand for show goers.

### NOT GOING

**Tied Up . . .**

**Can't Spare the Time**

You're not left out. Next to attending the Show, reading about it in the NEWS' Pre-Show, Show and Post-Show issues is the best possible way to obtain the benefits that such all-industry shows offer. We'll report on all the exhibits, new products, technical meetings, social functions and general color long before any other industry publication . . . and with greater detail too!

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## ARI Report--

*(Continued from Page 1, Col. 2)*
under ARI Unitary Air Conditioner Section sponsorship, most of the 200 real estate dealers covered reported that year-round air conditioning of new homes is becoming a major factor in promotion of the sale of new homes.

### FHA May Require Certification

In connection with the certification program and its application in the sale of residential air conditioning, the section was told that an amendment to the Federal Housing Administration's Minimum Property Specifications is expected to contain a requirement for certification of unitary equipment in homes financed through FHA-guaranteed loans.

It was also pointed out that the National Association of Home Builders participated in the production of, and is now cooperating in the distribution of a color film titled "The Climate that Sells" prepared for showings to NAHB-affiliated local associations of home builders. A number of the participating manufacturers have purchased copies of the film and are using it at various types of meetings.

### Units Must Pass 4 Tests Besides Btu Rating

Because of the fact that Standard Ratings of units certified by their manufacturers in terms of Btuh seemed the most important phase of the program, this phase has been stressed in publicity and advertising.

However, in addition to meeting the rated capacity at Standard Rating Conditions, the units certified, that is, all units in a participating manufacturer's line, must pass four other performance tests under adverse conditions.

These are: Maximum Operating Conditions Test; Low Temperature Operation; Insulation Efficiency, and Condensate Disposal.

The Maximum Operating Conditions Test includes test runs at 90% and 110% of rated voltage. The unit is operated continuously for two hours; power is cut off for two minutes, then restored for one hour.

Requirements, to pass the test, are:

1. Operating without damage to any part.
2. Motors must run continuously for the first two hours without interruption by motor overload devices.
3. During the first five minutes after the two-minute shutdown, tripping of motor overload device is permitted to stop motor, followed by restart, and completion of run without further tripping.
4. Requirements must be satisfied without a water pressure drop through the unit exceeding 15 psi.

In the Low Temperature Operation Test, the unit is required to run continuously, or stop and start under automatic limit device, for 12 hours. Requirements are:

1. Operation throughout without damage.
2. Frost or ice formation not sufficient to cut off air flow.
3. During test and subsequent defrosting, all ice or meltage must be caught and removed by drain.

The Insulation Efficiency and Condensate Disposal tests are simultaneous and continuous, with controls, fans, damper and grilles set for maximum sweating, for four hours after condensate level is in equilibrium. Under this run, no condensed water shall blow, drip or run off unit casing.

A report on the progress of the testing phase showed that as of the middle of November, some 31 units have been run through the routine, with all but six passing—some of them with minor adjustments and changes. "Changes are being made by the makers of these units," said the report, "and we expect that they, too, will be corrected to meet the capacities certified by their manufacturers, and the equipment performance requirements.

In connection with the failures, one company sent its chief engineer to the laboratories to investigate the situation and it was found that the unit was drawing excessive current at the high-temperature operating condition. Cause of the trouble was discovered and corrected, and after a new cutout had been installed and the unit operated for a reasonable period to establish conditions, the current draw at high-temperature conditions had greatly decreased, and the unit operated satisfactorily.

The engineer expressed satisfaction with the over-all procedure, the report stated, and felt that his visit to the laboratories had been well worth while, since he had obtained some ideas there for use in the laboratory at his own plant.

While the Unitary Air Conditioner Certification Program is the only such program now in effect, a number of others are under consideration by other product sections. Unitary heat pumps, not now included in the unitary certification program, probably will be a part of it in 1961, although the heat pump program will stand on its own, with separate licensing agreements.

One of the Heat Transfer sub-sections is planning certification programs for room fan-coil air conditioners and room air-induction units. The Water Cooler Section is committed to a program for drinking-water coolers.

Also, the Reciprocating Compressor and Condensing Units Section is examining the problem involved in, and the possibilities of, a certification program covering at least some portion of its products.

C. F. Gray

E. E. Husted

## Union Carbide--

*(Continued from Page 1, Col. 5)*
The two will work closely in expanding Carbide's program of sales and service to the air conditioning and refrigeration industries, it was stated.

For the past two years, Husted was manager of Ucon fluorocarbon sales to the aerosol industry.

Gray was formerly a technical representative of the Ucon propellant marketing group, according to an announcement of the chemical producer.

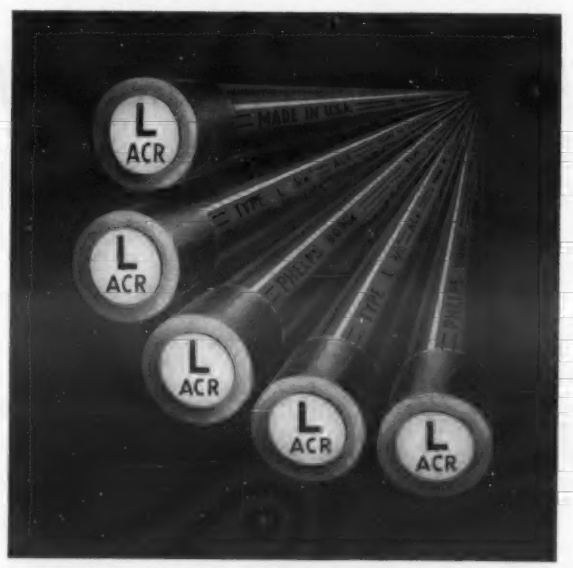

WHY YOU SHOULD SPECIFY

# Phelps Dodge Copper Refrigeration Tube

*The Famous Mine-to-Market Quality Line!*

1 **HIGHEST GRADE COPPER.** Phelps Dodge refrigeration tube is made of the finest copper from Phelps Dodge's own U.S. open-pit mines. Smelting and refining of the copper ore are also done by Phelps Dodge to assure lasting quality.

2 **FINEST QUALITY CONTROL.** Phelps Dodge refrigeration tube is carefully controlled for quality throughout fabrication, rigorously tested before being packaged to assure finest tube properties and lasting quality in service.




3 **COLOR-CODED ACR TUBE.** Phelps Dodge ACR tube is specially cleaned for refrigeration use. Extra-long coded end caps are your assurance of factory-clean tube at job site. Tube is color coded "ACR" for your protection.

*Quality tube sold the quality way—through authorized wholesalers!*

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